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FOREWORD

In 1905, two German scholars, Karl Kalbfleisch and Hermann Schöne, published a small selection of Greek medical texts on papyri. Their collection was followed, four years later, by a comprehensive survey of documentary papyri relating to medicine by Karl Sudhoff, the leading medical historian of the period.¹ Sudhoff's aim was to bring to the notice of the wider medical community the new information on medicine in the classical world that was being brought to light as papyri were being edited for the first time around Europe. Since then, and particularly over the last thirty years, many new texts have been published, and their relevance to wider medical history discussed in a variety of books and articles. This new volume of papyri from Oxyrhynchus, the first major collection of medical papyri from a single place, adds considerably to the number of published medical papyri, as well as offering new starting points for further research.²

At a local level, it amplifies Peter Parsons' magisterial account of medicine, health, and disease at Oxyrhynchus.³ It confirms the prevalence of eye diseases, fevers, ulcers, and haemorrhoids, but the patient is almost entirely absent except as the subject of doctors' medical reports in cases of wounding (5254-7) or as the owner, and possibly writer, of some of the lists of simple recipes published here for the first time. Similarly absent are traces of interaction with practitioners of traditional Egyptian medicine, such as is documented for Tebtunis, but this is hardly surprising in one of the most Hellenized cities of Graeco-Roman Egypt. A few Egyptian names appear among the authors of recipes, but the invention of valuable herbal remedies was never confined to the literate elite, let alone to the compilers of learned handbooks such as Heras of Cappadocia (5230), as the recipe obtained from Maximus the stone-cutter (5246) shows. The haphazard way in which remedies could be acquired, evinced in Galen's description of his own methods of collecting recipes, *Ind.* 31-7 (11.9-13.2 Boudon-Millot-Jouanna), is neatly exemplified here in remedies apparently copied from a learned source and others that are much simpler and more medico-magical in character (5245). It is precisely the enormous variety of healing practices found here that makes this volume a valuable resource

¹ K. Kalbfleisch, H. Schöne (edd.), *Griechische Papyri medizinischen und naturwissenschaftlichen Inhalts* (BKT III; 1905); K. Sudhoff, *Ärztliches aus griechischen Papyrus-Urkunden: Bausteine zu einer medizinischen Kulturgeschichte des Hellenismus* (1909). A second volume, edited by Wilhelm Crönert, was to deal with non-documentary papyri, including recipes.

² Earlier editions are listed by M.-H. Marganne, *Inventaire analytique des papyrus grecs de médecine* (1981). Recent texts of importance include the four volumes edited by Isabella Andorlini as part of the project for a Corpus of Greek medical papyri ('Specimina' per il Corpus dei Papiri Greci di Medicina (1997), *Greek Medical Papyri I-II* (2001-9), and *Testi medici su papiro* (2004)). Two online resources of relevance are Mertens-Pack³, http://cipl93.philo.ufl.ac.be/Cedopal/MP3/dbsearch_en.aspx, where a 'subgenre' search for 'medicine and surgery' currently brings up 315 entries; and the more general <http://web.philo.ufl.ac.be/cedopal/eng/medecine-dans-legypte-greco-romaine>. A recent survey of this material for non-specialists is M.-H. Marganne, 'L'apporto dei papiri letterari greci alla storia della medicina antica', *ACR NS II* 2 (2008) 238-59.

³ P. Parsons, *City of the Sharp-Nosed Fish: Greek Lives in Roman Egypt* (2007) 177-85.

for understanding the medical world of Graeco-Roman Antiquity. Even if not every town was as populous as Oxyrhynchus and few were so well connected to a major medical centre such as Alexandria, one might conclude that the range of medical ideas and practices available in an urban centre would still have been considerable, and would not have been confined to the small groups of learned medical sectaries whose intellectual theories have tended to dominate the history of medicine.

Some familiar names are to be found at Oxyrhynchus—Hippocrates (5219–23), Dioscorides (5224–6), and, in late papyri, Galen (5227–9), and the new papyri bring several valuable new readings as well as others that lend support to those of major manuscripts, most notably to the text of the Hippocratic *Prognostics*, 5223. 5220 is the earliest surviving example of a collection of different Hippocratic texts, common in much later manuscripts, and includes part of *The Use of Liquids*, a small treatise not always included in major selections from the Hippocratic Corpus. But among the pre-fourth century papyri edited here, these familiar authors are outnumbered by others, no less learned, who, save possibly for Heras (5230) and Heraclides (5231), cannot at present be identified. Some writers are acquainted with ideas on the importance of humours and bodily fluids, although it would be premature to call them Hippocratics, but others show a greater respect for Asclepiades of Bithynia (5236) and for Thessalus of Tralles (5235, cf. 5233–4) than one would expect from the vituperations of Galen. Asclepiades was certainly viewed as an important commentator by the author of the anonymous commentary on the *Epidemics* (5231), himself a learned man, and possibly to be identified with Heraclides of Tarentum, one of the greatest of all Hellenistic physicians. Indeed, it is tempting to agree with Galen that in his day, in the 170s, adherence to Hippocrates was far from common, *Opt. Med. Cogn.* 2.1 (CMG Suppl. Or. IV 47.15–17 Iskandar), although, as these papyri make clear, those who offered alternative theories were by no means the incompetents that Galen alleged, and they were far from united in their theories. Treatments involving complex surgery (5232) also serve as a reminder of the achievements of Hellenistic surgeons, and particularly those trained at Alexandria.

The type of medical document found in these new papyri is similarly varied. As well as expository tracts, there are several examples of a catechism form of question and answer (5235, 5238–9, 5241), a valuable didactic method, and one that would also have been accessible to the *philiatroi* who supported and employed doctors. 5251 is the only certain example from Oxyrhynchus of a medical text on parchment, a collection of recipes that can be compared with Galen's use of parchment notebooks into which to inscribe his remedies, *Ind.* 33, 37 (12.1, 12.21 Boudon-Millot–Jouanna). Historians of ancient pharmacy will also find new evidence for the ancient drug trade, as well as for the preparation of perfumed oils (5242).

In short, this volume, the largest single collection of medical papyri to be published, not only supports many of the approaches to ancient medicine that have developed over the last decades and supplements the textual advances made in the study of Hippocrates, Dioscorides, and Galen, but also prompts a re-evaluation of medical theory and practice in the Hellenistic and Roman periods.

V. NUTTON

PREFACE

The papyri edited in this volume by M. Hirt and D. Leith were studied in the research project 'New Medical Papyri from Oxyrhynchus', generously funded by the Wellcome Trust [grant number: 082230], and directed by N. Gonis and V. Nutton (University College London, 2007–10). A pilot project (2006–7), also funded by the Wellcome Trust [grant number: 079234], provided much of the groundwork, developing an idea originally conceived by V. Nutton and C. E. Römer.

Two workshops at UCL allowed closer study of a number of texts with the help of external advisors (I. Andorlini, R. Flemming, J.-L. Fournet, C. Magdelaine, M.-H. Marganne). Other texts were discussed by a larger group of experts at the British Academy workshop 'New Light on Ancient Medicine' on 17 May 2011. We are grateful to all participants for their comments and advice.

The final drafts were revised for publication by W. B. Henry; the volume has benefitted enormously from his exacting scholarship and customary attention to detail. He also compiled the indexes and undertook the typesetting of the volume, a novel task carried out with accuracy and speed.

D. Colomo dealt with many imaging, conservation, and editorial issues with efficiency and promptness. A. Sarri and D. Bafa helped with the imaging at UCL.

It remains to express our sincerest gratitude to the institutions that made the research for this volume possible: the Wellcome Trust, the Arts and Humanities Research Council, and the British Academy.

December 2014

N. GONIS

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DC = D. Colomo
MH = M. Hirt

NG = N. Gonis
DL = D. Leith

WBH = W. B. Henry
LT = L. Tagliapietra

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NOTE ON THE METHOD OF PUBLICATION AND ABBREVIATIONS

The basis of the method is the Leiden system of punctuation; see *CE* 7 (1932) 262–9. It may be summarized as follows:

$\alpha\beta\gamma$	The letters are doubtful, either because of damage or because they are otherwise difficult to read
...	Approximately three letters remain unread by the editor
[$\alpha\beta\gamma$]	The letters are lost, but restored from a parallel or by conjecture
[. . .]	Approximately three letters are lost
()	Round brackets indicate the resolution of an abbreviation or a symbol
||$\alpha\beta\gamma$||	The letters are deleted in the papyrus
$\overset{\cdot}{\alpha}\beta\gamma$	The letters are added above the line
$\langle\alpha\beta\gamma\rangle$	The letters are added by the editor
{ $\alpha\beta\gamma$ }	The letters are regarded as mistaken and rejected by the editor
^	A space of approximately the width of an average letter is left blank

Bold arabic numerals refer to papyri printed in the volumes of *The Oxyrhynchus Papyri*.

'GMP' is used for I. Andorlini (ed.), *Greek Medical Papyri I–II* (2001–9). Otherwise the abbreviations used are in the main identical with those of the *Checklist of Editions of Greek, Latin, Demotic, and Coptic Papyri, Ostraca, and Tablets* at <http://papyri.info/docs/checklist>. An earlier version, now largely superseded, remains available at <http://library.duke.edu/rubenstein/scriptorium/papyrus/texts/clist.html>; J. F. Oates et al., *Checklist of Editions of Greek Papyri and Ostraca* (*BASP* Suppl. 9, 2001), is the most recent printed edition.

I. EXTANT MEDICAL TEXTS

5219. HIPPOCRATES, *APHORISMI* 5.35–7, 6.5–7

49 5B.101/K(1–3)e

2.7 × 3.5 cm

Third/fourth century
Plate I

A small fragment of a papyrus codex, with the ↓ side preceding the → side. The inner margin is preserved on both sides, on the ↓ side to a width of 0.4 cm. A line held about 29 letters and the column width will have been 8–9 cm, if allowance is made for the crowding of letters at line end. In W. H. S. Jones' edition of *Aph.*, there are approximately 4,350 letters between the end of the ↓ side and the end of the → side. These will have taken up 150 lines. There must then have been two columns to a page, each approximately 50 lines high; the present fragment will give the inner column on each side of the leaf. The column height will have been c. 25 cm. For papyrus codices with double columns, see Turner, *Typology* 35–7, adding e.g. LXXIII 4949. 5224 and 5227 are further examples.

The text is written in an informal hand with some contrast of thick and thin strokes: note e.g. in → 5 the thin crossbar and thick uprights of π or the thin left-hand branch and thick upright and right-hand branch of υ. ε has an extended crossbar; κ has extended branches; ρ is tall with a large loop; υ is Y-shaped with shallow bowl and tall upright. Letters may be written smaller at line end. Cf. e.g. XI 1358 (*GBEPP* 1b, MP³ 522), assigned to the third or fourth century; LIII 3696 (MP³ 1919.71), assigned to the later third or early fourth century; P. Herm. 4 (*GBEPP* 2a), of c. 317–323.

Transition between aphorisms was apparently marked by both high dot and paragraphus, although they are not attested together in what survives (high dot at → 3; paragraphus below ↓ 4 and 6). This method of separating aphorisms is paralleled in a parchment codex of *Aph.*, P. Ant. I 28 (MP³ 543), although there it is also used to mark significant sense breaks within individual aphorisms.

Five other papyri of *Aph.* have been published: besides P. Ant. 28, there are P. Ant. II 86 (MP³ 544), III 183 (MP³ 543.3), P. Fay. 204 (MP³ 543.1), and P. Köln I 19 (MP³ 543.2). None overlaps the present fragment. For the indirect tradition on papyrus, see on 5232.

The papyrus provides ancient evidence for several passages where the later tradition offers variants. It omits insertions found in C' and in the indirect tradition at → 3 and 6, and has the truth at → 7 where C' and part of the indirect tradition have an inferior reading.

I am extremely grateful to Caroline Magdelaine for generously sharing with me her 1994 Paris thesis, *Histoire du texte et édition critique, traduite et commentée, des Aphorismes d'Hippocrate*. L. G. Westerink's edition of the commentary by Stephanus of Athens in *CMG* XI.1.3.3 (1995) has also been used. The direct tradition is represented by C', M, and V; the old Latin translation (lat), and the lemmata of the commentaries by Galen (Gal), Stephanus (Steph), and Theophilus (Theo) are also cited. For full details, Magdelaine's edition should be consulted, and for the indirect tradition, Anastassiou–Irmer, *Testimonien zum Corpus Hippocraticum*.

γ]υναικ[ι υπο υστερικων ενοχλουμενη
η δυστ[οκουση παρμος επιγενομε
νος α[γαθον γυναικι τα καταμηνια α
5 χροα κα[ι μη κατα τα αυτα αιει γιγνομε
να καθαρ[σιος δειχθαι σημεινει γυναι
κι εν γαστ[ρι εχουση ην οι μασθοι εξαι
φνης ιχυ[ροι

iv 544.5 L. = 438.5 Magdelaine

π]λευρησι
και εν στηθεσι και εν τοικω] αλλοισι
ει μεγα διαφερουσι καταμαθ]ητεον
τα νεφριτικα και οκοσα κατ]α την κυστι
5 εργαδωσ υγιαζεται τοι]σι πρεσβυ
τησι αλγηματα κατα την κ]οιλιην γιγνο
μενα τα μεν μετεωρα] κουφα τα δ[ε

iv 564.4 L. = 449.8 Magdelaine

1] [: a trace of the foot of a vertical above *v* in 2.

2 ενοχλουμενη restored with C' M Gal(MP) Steph Theo(UV). *εχλουμένη* is given by V^a.

3 η: Gal(M) has *η* καί.

3-4 επιγενομε]νος restored with MV^a Steph Theo(UV). C' Gal(MP) have *επιγινόμενος*.

4 V^a Gal(MP) Steph Theo(UV) omit *τά* (restored here).

4-5 α]χροα: Galen and Stephanus know a variant *χρονια*, absent from the rest of the tradition.

5 τα αυτα restored: C' alone has *τὸ αὐτό*.

αιει restored with MV^a Theo(UV) for reasons of space. It is omitted by C', Gal, Steph, and the old Latin tradition, and Magdelaine (640) was inclined to consider it an innovation of MV^a and Theo(UV).

5-6 γιγνομε]να: for the assumed spelling, cf. → 6.

7-8 The papyrus agrees with M Steph in placing *εξαιφνης* after *οι μασθοι*; in C' Gal(MP) Theo(UV), it stands before, and in V^a, *εξαιφνης* stands before.

8 The papyrus will have had *ιχυροι γενωνται*: V^a alone has *γένωνται ιχυροί*.

3 C' Gal(M) Theo(UV) have *μέρεσιν* after *άλλοισι*; there is no room for it in the papyrus. Magdelaine

inserts (*τὰς ἄρας*) in the same place, from the parallel passage *Epid. VI 7.11* (v 342.10-12 L. = p. 162 Manetti-Roselli), but notes (665) that the words will have been lost at an early stage, since Galen assumes the usual form of the text.

ει μεγα διαφερουσι restored with C' MV^a Gal(MP). Steph Theo(UV) have *ἦν μέγα διαφέρωσιν*.

4 οκοσα restored with M Gal(P) on grounds of space. V^a has *όσα*, and C' Gal(MV) Steph Theo(U) *τά*; Gal(S) Theo(V) omit the word.

την: omitted by Theo(U).

After *κύστω*, Theo(UV) has *ἀλγήματα*.

5 εργαδωσ restored with MV^a Gal(MP) Steph; C' Theo(UV) have *δυσχερῶσ*.

5-6 πρεσβυ]τησι restored with MV^a Steph Theo(UV). *πρεσβυτέροις* (C' Gal(MP)) is less well suited to the space.

6 αλγηματα restored; to judge by the space, the papyrus probably agreed with C' in omitting *τά* before *ἀλγήματα*, and with V^a Theo(U) in omitting *τά* after it.

The papyrus cannot have agreed with C' Theo(UV) in having *καὶ οἰδήματα* after *ἀλγήματα* (cf. also 7 n.). As Magdelaine notes (666), the fact that Galen does not comment on the word, and its absence from the Latin translation, indicate that it is a late insertion, and its appearance in a different place in Steph (7 n.) points in the same direction.

6-7 γυνο]μενα: so spelt in MV^a Theo(U); *γυν-* in C' Gal(MP) Steph Theo(V).

7 Steph has *καὶ οἰδήματα* after *γινόμενα*. There is not room for it in the papyrus (cf. 6 n.).

κουφα with MV^a Gal(M); *levēs* lat(P2/R). α is a slightly sloping upright, not suiting ο. C' Gal(P) Steph Theo(V) have *κουφότερα*, and lat(P1/V) *leviores*; Theo(U) has *κουφότατα*. Magdelaine (666) argues that the comparative was substituted in order to give a parallel to *ιχυρότερα* in what follows.

D. LEITH

5220. HIPPOCRATES, DE ALIMENTO 48-51, DE LIQUIDORUM USU 1

32 4B.3/K(4-6)b

Fr. 1 3.6 × 8.9 cm

Second/third century
Plate I

Two fragments each giving part of a single column, with text running along the fibres. Fr. 1 preserves the right-hand margin to a width of about 0.5 cm, and the left-hand margin in fr. 2 is preserved to a width of 2.9 cm. The back is blank.

The text is copied in a medium-sized, informal round hand with some ligatures. There are right-pointing hooks at the feet of some uprights. δ is broad. ε appears once in cursive form (fr. 1.8). ν is v-shaped or Y-shaped. Cf. e.g. the second hand of P. Köln III 143 (190), LI 3614 (200), XLIII 3100 (225), M. Chr. 211 (233).

There are corrections, apparently due to the hand of the text, at fr. 1.15 (supralinear addition) and 17 (expunction dots). A marginal *ancora* at fr. 2.9 indicates an omission made good in the lower margin: cf. 5232 ii 37-8 with introd. A gently ascending bar joined on its right by the lower end of the right-hand arc of a circle appears in the margin at fr. 2.14, and there is a smaller example of the same at fr. 2.10. WBH suggests that these are used in place of paragraphi to mark major divisions, noting that they are found in the two places in this stretch of text where Heiberg and Potter punctuate with a full stop. ηι is written for η at fr. 1.4. There is no other evidence for the scribe's practice in relation to the use of iota adscript. No punctuation survives

within the text except a blank space at fr. 1.8 (see 8–9 n.). Elision is not marked at fr. 1.12.

The text of fr. 1 comes near the end of *Alim.*, and that of fr. 2 near the beginning of *Liqu.* Each fragment has between 21 and 27 letters to a line, with an average of 23. The end of *Alim.* would take up another 9 lines, and *Liqu.* will have begun 12 lines before fr. 2.1. If *Liqu.* began at the top of a column, the column will have held at least 29 lines and been at least 13.8 cm tall. Fr. 1 may have belonged to the preceding column, and there would be room at the foot of the column for a title. For rolls containing two or more short texts, see W. A. Johnson, *Bookrolls and Scribes in Oxyrhynchus* (2004) 143–4.

In Erotian's list of Hippocratic works, *Alim.* appears close to *Liqu.*, both being included in the category of dietetic works: 9.15–17 Nachmanson *εἰς διαίταν* ... *Περὶ τροφῆς, Περὶ ἀφόρων, Περὶ ὑδάτων* (the last is an alternative designation of *Liqu.*: Anastassiou–Irmer, *Testimonien zum Corpus Hippocraticum* i 292–4). But when the works are arranged in the order in which Erotian read them, these two texts do not appear close together: see e.g. A. Roselli, *AION (filol)* 22 (2000) 179–84. The two texts are again close to one another in the *πίναξ* translated by 'Alī ibn Riḍwān (Anastassiou–Irmer, *Testimonien* iii 449–50), where *Alim.* is no. 11 and *Liqu.* is no. 13, and in the *πίναξ* in manuscript V of Hippocrates, where *Liqu.* is no. 24 and *Alim.* is no. 25 (CMG I.1 I.11), but they do not appear close together in the only mediaeval manuscript that includes *Liqu.*, A (cf. J. Irigoien, *RHT* 3 (1973) 9).

Other papyri with multiple Hippocratic treatises are limited to codices, namely P. Ant. I 28, III 184 and 185 (MP³ 543, 545.1, 539.1); the case of XXXI 2547 (MP³ 545.3) is uncertain (cf. ed. pr.). No papyrus fragments of *Alim.* or *Liqu.* have so far been published, though P. Flor. II 115 (MP³ 456.22) preserves a commentary on *Alim.*, perhaps to be attributed to Galen (see most recently CPF 1.2* 18 Hippocrates 25T).

The text of *Liqu.* otherwise depends on A alone. *Alim.* is transmitted by A and M and in the Arabic translation by al-Bitrīq (Ar), a collage of lemmas from the commentary by Galen (so I. Garofalo, *Galenos* 6 (2012) 123), edited by J. N. Mattock, *Hippocrates: On Humours and Hippocrates: On Nutriment* (1971), with an English translation. Extracts from Galen's commentary preserved in Arabic are edited by Garofalo 123–64, with an Italian translation. There is nothing of particular note in the text of *Liqu.* But in *Alim.*, the papyrus is of considerable importance, as demonstrating that the familiar Greek text of this part is vitiated by numerous insertions made for the sake of clarity. It offers a superior text lacking these insertions in several places: cf. fr. 1.4, 10, 11–14, 14–15, 15–16 nn. In two cases, the superior text was already known from the Arabic (fr. 1.4, 14–15 nn.), but the rest of the improvements are new. In two places (cf. fr. 1.3–4, fr. 2.9–10 nn.), there is corruption in the main text due to *saut du même au même*, but in the latter case, the omission was made good in the margin, and the same may apply to the former, where the left-hand margin is missing. There are two new false readings: cf. fr. 1.8–9 n. (inserted article), fr. 2.14–15 n. (accusative for nominative).

For *Alim.*, the editions of Littré, of J. L. Heiberg in CMG I.1 (1927), of R. Joly in vol. vi.2 of the Budé Hippocrates (1972), of W. H. S. Jones in vol. i of the Loeb Hippocrates (1923), and of K. Deichgräber, *Pseudhippokrates Über die Nahrung* (1973), have been consulted, and for *Liqu.*, those of Littré, Heiberg, Joly, and P. Potter in vol. viii of the Loeb Hippocrates (1995).

Fr. 1

(ix 116.15–118.11 L. = 84.7–17 H. = 146.20–147.10 Joly)

καθ ηλκικη]ν κα[ι
 ξυμφωνα και διαφων]α κ[α]ι νου
 σου και υγιειης σημη]α και νουσου
 μαλλον η υγιειης τρο]οφη και πνευ
 5 μα υγρη τροφη] ευμεταβλητος
 μαλλον η ξηρη υ] ξηρη τροφη ευ
 μεταβλητος υ] μαλλον [η υγρη
 η δυκαλλοιωτος] υ] η δυσεξ[ανα
 λωτος η ευπρο]σθετος ευ[εξα
 10 ναλωτος υ] ταχ]ειης προσθ[εσιος
 δεονται υγρον ι]ημα ες αν[αλη
 ψιν υ] ταχυτερη]ς δι οσφρη]σιος
 βραδυτερης προ]σθεσιος δε[ον
 ται στερεη τροφη] μυες στερ[εω
 15 τεροι δυσεκτ]η]τοι τα γε[γυ
 μναςμενα κατα] γενος αυτα [ε
 ωυτων ιχυροτερ]α του [τ'ε] ο[ν

Fr. 2

(vi 118.7–15 L. = 85.7–14 H. = 164.8–17 Joly)

μα [εφηλκωται θερμω αιονη
 cis π[υριη του σωματος απαντος
 η με]ρεος δερματος σκληρου
 μαλθ[αξικ συντεταμενου χα
 5 λαις υ] ευρων καρκων εκχυμω
 cis ιδρ[ωτος αφοδος υγρηναι προ
 κλυ]σαι οιον ρινας κυστιν φυσας
 καρκ[ωσαι απαλναι τηξαι μι
 7 νυθη]σαι χροιν
 10 > υπ[νικον και κατα κεφαλης
 και [αλλων σπασμων τετανων
 παρ]τηγορικον οδυνας κωφοι ω
 τος οφ[θαλμων οσα τοιαυτα
 > τα ψυχρ[α θερμηναι οιον πις
 15 σαν ελκ[εσιν πλην τοικιν αι
 μορραγε]ουσιν η μελλουσιν κα
 τηγ[μασι

Fr. 1

1 καθ ηλκικη]ν κα[ι. Ar appears to translate instead και φλεβων.

3–4 σημη]α και νουσου | [μαλλον η υγιειης. M has σημη]α, και υγιειης μαλλον η νουσου και νουσου μαλλον η υγιειης, while AAr omit these words by *saut du même au même*. The text of the papyrus also seems to be the result of a *saut du même au même*.

4 τρο]οφη: τροφη γαρ codd. Ar appears not to have had γαρ και. '-η for -η is no doubt a trivial error (cf. e.g. 5233 ii 4), but the γαρ of AM is likely to be an intruder, inserted in order to remove the asyndeton: the word is not found elsewhere in *Alim.* and does not seem in the author's manner' (WBH).

8–9 η δυκαλλοιωτος] υ] η δυσεξ[ανα]λωτος: η δυκαλλοιωτος δυσεξαναλωτος codd., Gal. *Hipp. Aph.* 2.18 (xviiB 489.1 K.). 'The blank space signifying punctuation and the article are no doubt due to assimilation to the preceding η δυκαλλοιωτος at the start of a sentence' (WBH).

9–10 η ευπρο]σθετος ευ[εξα]ναλωτος om. AAr.

10 Before ταχ]ειης, M has και οκοκοι (cf. Ar, and the Galen testimonia in Anastassiou–Irmer, *Testimonien* ii.1 and 2, which offer οκοκοι, Wer, οκοι γαρ), but the space will not accommodate it here. Cf. 11–14 n. below for discussion.

11–14 υγρον ι]ημα ... δε[ον]ται. M gives υγρον ι]ημα ες αναληψιν δυναμιος κρατιστον οκοκοι δε ετι ταχυτερης, δι' οσφρη]σιος οκοκοι δε βραδυτερης προσθεσιος δεονται. 5220 appears to have had the same mate-

rial more concisely expressed: there is no room for (a) *δυναμιοι κρατιστον* after *εσ αν[αλη]ψιν*, (b) *οκοσοι δε εστι* before *ταχυτερη]ς*, or (c) *οκοσοι δε* before *βραδυτερης προ]εθεσιος*. For the absence of relative and connective in (b) and (c), cf. the assumed absence of *και οκοσοι* before *ταχ]ειης (10)*.

Gal. *Hipp. Aph.* 2.11 (xviiB 467.6–9 K.) offers a text close to that of M, with at (a) *δυνάμεως ἄριστον*, and at (b) *ὄκου δὲ ἔτι*. Ar is also close to M. A has a garbled text, *δι' ὀσφρήσιος ταχυτέρης ὑγρόν ἕγμα τρέφει* (-φ- p.c.) *ξενεχέως* (corrected to *ξυν-* by A²).

The missing relatives and connectives in 10–14 are unnecessary: cf. for the style e.g. *Liqui.* 1 (fr. 2.1–2; vi.π18.7 L. = CMG I.1 85.7 = 164.8–9 Joly) *αὐτὸ τὸ δέρμα ἐφήλωται· θερμῶ αἰονήσεις*, where Littré supplied (εἰ) before, rightly not adopted by Heiberg; or e.g. Call. *Hy.* 6.84–6. They may have been added for clarity. The same may apply to point (a). There is no mechanical explanation available for any supposed omission' (WBH).

14–15 *μνες στερ[εω]τεροι δυσεκτ]η' κ' τοι. δυσέκτηκτοι* is due to Cornarius (cf. Ar 'become exhausted and wasted less quickly'): M has *δυσεύτηκτοι*, A *δυσεκτικοί*. M and A continue with *τῶν ἄλλων παρέξ ὀστέου και νεύρου*, but the phrase is not present in Ar or 5220, and it may have been inserted to explain the use of the comparative degree. *παρέκ* and *παρέξ* are not found elsewhere in the Hippocratic Corpus according to the *Index Hippocraticus*. (Previous editors, working from the longer text, emended to account for the genitive *τῶν ἄλλων*: Littré inserted *μᾶλλον* before it, while W. A. Heidel (*HSCP* 25 (1914) 193), followed by Heiberg and others, suggested that 'δύστηκτοι (or whatever form we here accept) is a gloss on *στερεώτεροι*.)

15–16 *τα γε[γυ]μνασμενα*. AM give *δυσμετάβλητα τὰ* (om. A) *γεγυμνασμένα*. Ar offers 'they do not tire when emaciated and do not become fatigued' in this place, which does not correspond closely to the text of AM. 'δυσμετάβλητ- may have come in as a gloss on the immediately preceding *δυσέκτηκτοι*, with the termination adjusted to suit the context' (WBH).

17 *του [ι'ε] ο[ν]τος*. ο[ι] is represented by the left-hand arc of a circle. The papyrus thus seems to have agreed, after correction, with AM in giving *τοῦ ὄντος*. Littré, however, emended this to *έόντα*, and was followed by Jones and Joly, while Heiberg was satisfied with the transmitted text.

Littré's emendation *έόντα* is only syntactically possible if *δυσμετάβλητα* is present in the text as the predicate: *δυσμετάβλητα τὰ γεγυμνασμένα, κατὰ γένος αὐτὰ έωντῶν ίσχυρότερα έόντα*. If *δυσμετάβλητα* is an intrusion, as this papyrus suggests, then *κατὰ γένος αὐτὰ έωντῶν ίσχυρότερα τοῦ ὄντος* will be the predicate. If Littré's emendation were adopted, the sentence would be left without a predicate. *τοῦ ὄντος* is still problematic. Deichgräber prints his own conjecture *τοῦ δέοντος*, which is not too far from the assumed reading of the papyrus before correction (*του τε οντος*), but does not solve the problem of the double genitive of comparison, noted by Littré' (WBH).

Fr. 2

1–2 *αιονη]εις*. A gives *αιονήσις*, while Erotian α 48 (18.1 N.) has *αιόνησις*. The second hand of A emended to *αιονήσεις*, which is adopted by Heiberg and Joly. Littré and Potter print the noun *αιόνησις*, although Potter translates 'you will moisten'. There is no instance of itacism in what remains of the papyrus text (cf. fr. 2.5, 6), and it thus appears to agree with Erotian.

6–7 *προ]κλύσαι*. Potter reports -κλήση as the reading of A, noting that *προκλύσαι* was proposed by Foes after Cornarius' *prolutione*. The final trace in the papyrus is on the line and could suit either *υ* or *η*.

9–10 A's text is too long for the available space: ... *μυνοθήσαι, χροίην ανακαλέσαι, χροίην ανακεδάσαι. ὑπνικὸν και κατὰ κεφαλῆς και ἄλλων*. Apparently either *χροίην ανακαλέσαι* or *χροίην ανακεδάσαι* was omitted in 9; WBH suggests that it was the former, by *saut du même au même*. The *ancora* opposite 9 then must have signalled the text to be restored.

10 To the right of the marginal divider, a further trace on a damaged patch to the right at a higher level.

14–15 *πις]αν: πίσα* A. According to the papyrus' reading, the meaning will be that pitch is an example of the cold things that warm water can heat, for lesions etc. According to A's reading, pitch can heat cold things as warm water can. ('But pitch would be a rather unexpected example of something that is "cold" (why?) and to be warmed by means of water, whereas it is natural for the use of hot water in warming what is cold to be

compared to that of pitch. The corruption in the text of the papyrus may be due in part to the analogy of the accusatives in *προκλύσαι οἶον βύνας κτλ.* just before (6–7)' (WBH.)

D. LEITH

5221. HIPPOCRATES, DE MULIERUM AFFECTIBUS I 1.8–14

27 3B.42/E(7)b

6.5 × 15 cm

Third century
Plate I

A fragment from the same roll as P. Köln VII 311 (CPF I.2* 18 Hippocrates 10), the provenance of which was hitherto unknown. N. Gonis, *APP* 57 (2011) 4 n. 1, lists other manuscripts represented both in the Cologne collection and among the papyri recovered by Grenfell and Hunt at Oxyrhynchus. The new piece, written against the fibres on the back of an account, of which the text runs in the same direction, gives parts of 21 lines of a column, with right-hand and lower margins preserved, the latter to a depth of 2.6 cm. The cursive hand is comparable to such examples as SB XVI 12785 of 220.

Sense units are divided by dicolon (9, P. Köln 311.3) and midline dot (8, 21). Corrections have been made by the first hand above the line, apparently at 4 and certainly at 15, and a marginal note (correction or gloss) added in the right-hand margin at the level of 21. Initial *ι* and *υ* receive a diaeresis at 12, 14, and 20. There is the left-hand end of a horizontal stroke in the right-hand margin just above the level of line 17. It is too far left to belong to the text of the next column, but it may represent a paragraphus, for example.

A line holds 28–36 letters. The transmitted text of *Mul. I* would fill some 28 lines of this length before the first line of 5221. The half-way point between the beginning of the treatise and the end of the column in 5221 would fall within the lines preserved on the Cologne fragment. Both fragments must therefore come from the same column, the first of this treatise, and it must have held approximately 49 lines, giving an approximate column height of 28 cm.

The first editor of the Cologne fragment, identifying the remains of line 1 as representing *καθα]ρθηνα[ι* (viii 10.15 L. = 88.13 Grensemann), suggested that 32 letters, equivalent to one line, had been lost between the first and second lines of the fragment. If such a loss is assumed, the column will have had only 48 lines. But the proposed reading is not acceptable: *θ* cannot be read. The remains of the second letter consist of an upright curving to the right at the foot, from which a diagonal rises to culminate in a small loop, which then joins the top of the vertical of *η*. This may suit *κ* best (cf. in 5221 *κη* at 8 and *κε* at 12). The vertical of the first letter extends far below the line, and must belong to *ι*, *ρ*, or *φ*. We expect here part of the sequence *οἴσει ἢ εἰ ἄτοκος ἦν* (viii 10.16 L. = 88.14 G.). I have considered supplying *οἴσει*; *κῆν* ἄ[τοκος ἦ], though this would give the wrong sense. (One might compare the false variant *ἐπήν* for *ἦ εἰ* (viii 12.2 L. = 88.20 G.), but there the influence of an earlier passage has caused the corruption: cf. 4 n.)

The only other papyrus witness to *Mul.* published to date is the sixth-century codex P. Ant. III 184 (CPF I.2* 18 Hippocrates 9 and 12), which also contained *Superfet.* P. Ant. 184 fr.

4(a) overlaps with 5221 16–19. The mediaeval manuscripts are ΘMV; there is also Lat (the Latin translation) up to the end of section 13 (line 19 in the papyrus).

The text is of some interest. Considerations of spacing suggest that the papyrus offered a text superior to those of other sources at 14–15 and 17, and a possibly correct variant at 5. On the other hand, the text at 3–4 appears to have suffered from a *saut du même au même*. There is a problematic new reading at 8, and an inferior reading appears to have been offered in the lost part of 21, but the correct reading is given in the margin; similarly at 4 the correct mood may have been restored above the line. As regards dialect, the papyrus has *εουσεων* (5), *χωρεί* (6), and *τουτέου* (11).

Collated with the edition of H. Grensemann, *Hippokratische Gynäkologie* (1982). A. E. Hanson's edition, in her dissertation *Studies in the Textual Tradition and the Transmission of the Gynecological Treatises of the Hippocratic Corpus* (1971) 133–5, has also been consulted.

υπερτονε]ωζ[ιν : ατοκω
 δε εουση του τε σωματος ου ξ]υν[ηθεος εον
 τος επην πληρωθη ις]χυρ[ο]υ κ[αι] σ]τερε[ω]τε
 ρου εοντος η ει λοχιων] εμπειρ[ο]ς γενητα[ι]
 5 των μητρεων αστομω]τερων εουσεων τα [καταμηνια επιπονωτε]ρωσ χωρει και τα [παθηματα προσπιπτει] πλειονα ωστε τα [καταμηνια αποφρασσε]ςθαι · επην ατοκηση [εχει δε ωδε ως μοι και π]ριω ειρηται : φημ[ι
 10 την γυναικα αραιοσα]ρ[κ]οτερην και απαλωτε[ρην] ειναι η τον ανδρ]α : και τουτεου ωδε εχοντος απο της κοι]λις ελκει την ικμαδα και ταχιον και μαλ]λον το σωμα της γυναι]κος η του ανδρος κ]αι γαρ ει τις υπερ υδατος
 15 η και υδρηιου δυο] ημερας δυο ευφρονας θειη ειρια καθαρα κ]αι ειμα καθαρον και βεβυςμενον ευ ισο]ν τοικιν ειριοικιν ανελων ευρησει σ]της]ας πολλον βαρυτερα τα ειρια η το ειμα οτι] δε τουτο γιγνεται αιει
 20 αποχωρει εκ το ανεκ]ας [α]πο του υδατο[ς] ε]ν αγγειω ευστομω εοντο]ς · και τα μεν ειρ[ι]α

viii 10.20 L. = 88.18 G.

ευρυστο
 μω

3 ις]χυρ[ο]υ : και ις]χυροτέρου τε M.

3–4 σ]τερε[ω]τερου εοντος. To judge by the space available, *και πικνοτέρου*, given by the other manuscripts, will have dropped out before *εοντος* (*saut du même au même*).

4 γενητα[ι] with V: *γένοιτο* rell. The supralinear traces may be the remains of *οι*, indicating the restoration of the optative by a corrector. M has *επην* before *λοχιων*, while the rest have *η ει*, which must be right on grounds of sense. *επην* may have come in from *Mul. I 1.5* (viii 10.13–14 L. = 88.11–12 G.) *επην λοχιων εμπειρος γενηται*; the same applies to V's subjunctive *γενηται*, which is ungrammatical after *η ει*. The papyrus may have had the correct *η ει* in the gap, along with *γενητα[ι]*, as in V, or *επην*, as in M, which would account for the subjunctive but give the wrong sense.

5 των μητρεων αστομω]τερων. The mediaeval manuscripts have *και* before *των*, but WBH notes that there is not room for it in this copy. Then M has *αναστομωτέρων* for *αστομωτέρων*. *εουσεων*: so Θ. MV have *εουσων*.

6 καταμηνια restored with V (on grounds of space): *επιμήνια* ΘM. The manuscripts all have *καταμήνια* later in this sentence, but the two compounds are used apparently interchangeably throughout *Mul.*, and the tradition is often divided: V also stands alone, e.g., at *Mul. I 2.19* (viii 18.16 L. = 94.5 G.) and 6.1 (viii 30.6 L. = 100.1 G.), while M is alone at 9.1 (viii 38.7 L. = 106.12–13 G.).

8 ατοκηση [: *ατοκος η* codd. The verb *ατοκέω* is otherwise only attested (twice) in *Ph. Her.* (i 478.16, 480.25 M. = iii 9.18, 13.4 W.). WBH notes that the tense would be surprising.

9 π]ριω. So MV: *πρώτων* Θ (*primo* Lat). In the earlier part of the line, V's *ωσπερ* (for *ως*) would be too long for the space.

11 τουτεου with Θ: *τούτου* MV.

14–15 υπερ υδατος | [η και υδρηιου. *υπερ υδατος η και χωριου υδρηλου* Θ: *υπερ υδατος και διαχωριου υδρηλου* M: *υπερ υδρωου υδρηλου* V: *<su>per aquam vel vase aquario* Lat. G. prints *υπερ υδατος η και διαχωριου υδρηλου*, noting Galen's gloss (on this passage?) *δια χωριου απο διαστηματος* (*Gloss.* (xix 93.2 K.)), and suggesting (on the basis of Lat) that *υδρηλου* is a corruption of *υδρηιου* (p. 149). The space will not accommodate G.'s text in full, and WBH suggests that *διαχωριου* (M) or *χωριου* (Θ), which has nothing corresponding to it in the Latin, may be intrusive: 'perhaps it was inserted in order to make it clear that the material should not touch the water but be kept at a distance'. The text is provisionally supplied above in accordance with this hypothesis.

It is not clear whether or not *υδατος* had a diaeresis on its first letter.

17 *ευ ισο]ν*. *εὐστάθμω* (-μωσ M) *ἴσον* ΘMV: *ponderosam* Lat. G. prints *κύσταθμον* {*ἴσον*}: cf. below. The *Index Hippocraticus* s.vv. *εὐσταθμος*, *κύσταθμος* suggests that the reading of ΘV should be taken as *εὐ*, *σταθμῶ ἴσον*. Building on this, WBH argues that *σταθμῶ* is a later insertion (to clarify *ἴσον*), and that the truth is *εὐ*, *ἴσον*. This fits the gap in the papyrus and is provisionally supplied above. In *P. Ant.* 184 fr. 4(a).2, the first editor's [*ευσταθμω ισον*] being too long for the space, A. E. Hanson, *Pap. Congr. XII* (1970) 217–18, proposed substituting *ευσταθμωσ*, which Cordaeus had conjectured in this passage on the basis of *Gal. Gloss.* (xix 143.16 K.) *κύσταθμον*: *ἰσόσταθμον*. WBH suggests that *ευ ισον* stood in that papyrus as well, and that Galen's *κύσταθμον* is taken from somewhere else.

18 πολλον. So ΘM: *πολλῶ* V, *P. Ant.* 184 fr. 4(a).

20 ανεκ]ας: *ἀνεγκασθαι* V.

του: om. V.

20–21 ε]ν αγγειω ευστομω. The other manuscripts give *εὐρυστόμω* after *ἀγγείω*. In this copy it has been added in the margin by the hand of the main text, as correction or gloss, and the word written in the body of the text was shorter, to judge by the space available. WBH suggests that it was *ευστομω*, and this has been provisionally supplied above. For confusion of *εὐ*- and *εὐρυ*-, WBH refers to his note on *Pind. Nem.* 4.11f. *Αἰακιδᾶν* | *εὐ(ρύ)πυργον ἔδος* (West's emendation), where he compares for the corruption *Pind. Ol.* 1.73 *Ἐὐ(ρυ)τρίαιναν* (corr. Moschopulus), *A. R.* 4.269 *εὐρύρροος* (Meineke: *εὐ(ρ)ροος* codd.), *Q. S.* 12.234 *ἐν* (Rhodomann: *εὐρύν* codd.), 246 *εὐρύς* (Köchly: *ἡύς* codd.). *εὐστομος* is attested, but not in the Hippocratic

Corpus, and εὐρύστομος, attested five times in the Hippocratic Corpus, will be correct.

εοντο]ς: εόντι MV. There is a trace high in the line, apparently the top of a stroke descending from left to right: not ι, but consistent with ε.

D. LEITH

5222. HIPPOCRATES, EPIDEMIAE I CASE II

63 6B.69/C(3-5)b

4.1 × 4.5 cm

Second/third century
Plate I

A small fragment preserving parts of 8 lines of a column, broken on all sides, with text running along the fibres. The back is blank.

The text is written in a formal upright hand. The hand is generally bilinear except that *v* descends below the baseline. The feet of verticals are sometimes decorated, and there are often small hooks at the tops of obliques in *α* and *λ*. *ο* is tiny; *ε* has a short crossbar and may have a markedly extended lower arc terminating in a small dot, as also in *ς*; *μ* has straight sides; Y-shaped *υ* has a broad shallow bowl; *ω* is virtually flat in the middle. There is a marked contrast between broad and narrow letters. IX 1174 (*GMAW*² 34), assigned by Turner to the later second century, is in a similar style.

A line filler is used at 2 (and one might be expected in a lacuna at 5). *ει* is used for long *ι* (8, restored at 6).

This is the first published papyrus of *Epidemiae I*; 5231 preserves an unidentified commentary on the treatise (to which 5222 could in principle belong). There are published papyri of *Epid. II*, *Epid. III*, and *Epid. VII*: see CPF L.2* 18 Hippocrates 14-16 (MP³ 537.1, 538, 538.01).

The text is accurate as far as can be determined. In three places (see 3, 7 nn.), it agrees with the remainder of the direct tradition (represented by A and V) against the lemmata of Galen's commentary ('Gall' in the notes). There is one new reading (2 δέ).

The text has been collated with the editions of H. Kühlewein, *Hippocratis opera* i (1894), and Littré (vol. ii, 1840). Galen's commentary is edited by E. Wenkebach (CMG V.10.1 (1934)). I am very grateful to Prof. Jacques Jouanna for advice on the tradition.

διψωδ]ης ασωδης ου[ii 710.5 L. = i 212.8 Kw.
ρα ομ]οια απο δε κοιλι >[
ης ου]δεν περ[ι] δε μεσον [
ημερ]ης πολλ[α παρ]εκρο[υ
5 εν και] παλιω ταχυ [
ςμεικρα] κατενοει ανι[
σταμεν]η υπεκαρωθη [

ψυξικς]μεικρα[α

1 ασωδης with AGall: om. V.

2 δε om. AVGall. For divergences in omission and inclusion of δέ in *Epid. I* case histories, see 3 n. and 5231 i 1, 5, and ii 10.

3 δε with AV: om. Gall.

μεσον with AV: μέσης Gall.

5-6 The space calls for -εν rather than -εε at the start of 5 and μει- rather than μμ- (cf. 8) at the start of 6.

7 υπεκαρωθη with AV: επεκαρωθη Gall.

8ς]μεικρα[α: l. σημειρά.

D. LEITH

5223. HIPPOCRATES, PROGNOSTICUM 7.10-II

5 1B.57/C(j)
II₂₁ Jouanna

6.8 × 16.6 cm

Later first century
Plate II

The lower part of a column, with remains of 20 lines written along the fibres. The lower margin is 4.5 cm deep, and the left-hand edge of the right-hand margin is preserved in part. On the back, near the top, there are two damaged lines of text running in the same direction as the text on the front. A line contained an average of 19 letters, and the original column width was about 7 cm.

The main body of the text is written in a rather untidy and irregular round hand. Bilinearity is breached principally by *ρ* and *χ* below and by *φ* above and below. The loop of *α* may be round or pointed. In initial position, after the gap in 8, it is enlarged, with its pointed loop extending below the line, while in the second example in 17, the tight round loop does not touch the oblique. The second oblique of *δ* projects beyond the apex. *ε* is generally made in three movements (upright, cap, and crossbar) and loses its turn-up, especially in the more hastily copied lines towards the foot (cf. e.g. the first example in 16, in which the three strokes do not touch); but in 20 (first), the cap and crossbar are made in a single movement. The branches of *κ* tend to join the upright low down, and the lower branch is almost flat. *μ* is rounded, with a deep saddle. The oblique of *ν* projects to the left and joins the second upright near the top. *ξ* has a long tail at 15, but not elsewhere. The two halves of *ο* are often inexpertly attached, as at 18 (first), and the right-hand arc may be reduced to an oblique, as at 12 (first); cf. the cirlet of *φ* (19). *π*, with its crossbar projecting to the left, has curved sides in the more carefully written part (e.g. 3), but straight sides towards the foot (e.g. 18). *ρ* has a tiny loop and its tail turns to the right at its tip. The cap of *ς* tends to be extended downwards on the right (e.g. 5). *υ* may be looped at the base or made of a short arc and an upright joining with a loop at the top right-hand corner (12, first). *ω* is also variable. It may be well-rounded and carefully joined, with a

Epid. VI 1.13 (xviiA 855.12 K. = CMG V.10.2.2 35.11) agrees with the papyrus in giving *δσα* (cf. 13 n.). Alexander-son (1968) 25, 199.10 n., prefers *ἄσσα* against *δσα* and *δικόσα* as *lectio difficilior* throughout *Prog.*

10 κ|αι. ι has a crossbar growing out of its side at mid-line level: perhaps the scribe began to write η.

εἰς with V: ἐς C' MGaL, printed by Jouanna. Cf. 12 n.

10–11 α[] [] ||]α. Galen, *Hipp. Prog.* 1.40 (xviiiB 103.18–104.2 K. = CMG V.9.2 254.25–255.3), knew of two readings in this passage, *ἀποκορυφούμενα* and *ἀποκυρτούμενα*. The latter is found at this point in MV, while C' GaL have the former. Where the papyrus reads *ἀποκυρτου*[μ]ενα below at 12–13, *ἀποκορυφούμενα* is given by C' MGaL(Ar), while VGaL(VR) have *συνεσταλμένα* (and GaL(F) *κατεσταλμένα*; om. GaL(P)). As Alexander-son (1968) 27, 203.3 n., suggests, the reading *συνεσταλμένα* in Galen's lemma may have made its way into the lemma (and then into V) due to the influence of Galen's own paraphrase, *συνεσταλμένα δὲ ὅλα πρὸς τινα κορυφήν ἀνατείνεται* (xviiiB 103.14–15 K. = CMG V.9.2 254.22–23). Alexander-son prints *ἀποκορυφούμενα* in both places, but allows that *ἀποκυρτούμενα* may be right in the first as *lectio difficilior* (27, 203.2 n.). Alexander-son thus seems to understand Galen's remarks on the variant reading as referring only to the first instance of the disputed word, but they would make equally good sense if read as referring to both places, i.e. if the different witnesses to which Galen had access had either *ἀποκορυφούμενα* twice or *ἀποκυρτούμενα* twice (the relevant remarks are as follows: *εἴτε δ' εἰς δὲ ἀποκυρτούμενα εἴτε εἰς δὲ ἀποκορυφούμενα γεγραμμένον εἴη, δῆλον ὅτι μία κατ' ἀμφοτέρας τὰς λέξεις ἐστὶ καὶ ἡ αὐτὴ διάνοια*). Since the papyrus stands alone with *ἀποκυρτούμενα* in the second place, it is perhaps most likely that *ἀποκυρτούμενα* was written also at 10–11, where damage precludes a certain reading. Jouanna adopts *ἀποκυρτούμενα* as *lectio difficilior* in both passages: cf. his discussion on p. 137 (22 n. 1).

11 τε εοντα. The surface is badly damaged and the dotted letters are very insecurely read.

The papyrus uniquely omits *καὶ πλατέα* after *εοντα*: perhaps the scribe skipped ahead to the next *καὶ*.

12 ουκ: the rest of the tradition has *ἦκιστα*. Doubtless simple banalization.

εἰς with V: ἐς C' MGaL, printed by Jouanna. Cf. 10 n.

12–13 ἀποκυρτου[μ]ενα: cf. 10–11 n.

13 οκσα with C' GaL, as printed by Jouanna: *δσα* M and Gal. *Hipp. Epid. VI*: *ἄσσα* V. Contrast *οσα* at 7.

13–14 ε[[cω]. The ε has a long crossbar (or possibly it was followed by a separate horizontal stroke used as a line filler). This suggests that the papyrus agreed with C' and Gal. *Hipp. Epid. VI* in reading *εω* (as printed by Jouanna), rather than *εἰω* (MVGaL).

14 ρηγνην|η] ὕται. *ρήγνηται* is found in MVGaL(VRP) and Gal. *Hipp. Epid. VI*, and printed by Jouanna, while C' GaL(F) have *ρήγνηται*. WBH suggests that the exemplar had *γιννηται* with *ρη* and *υ* written above the line as corrections, and that the scribe mistook the supralinear *ρη* for an addition and initially missed (or ignored) the supralinear *υ*. A corrector (the hand is perhaps the same as at the start of line 8) has cancelled the η in *-ηται* and corrected it with *υ* above the line, but *γν* is not deleted. The variant *γιννηται* may owe something to the palaeographical similarity of η to γν in some hands (as in that of this papyrus). For the termination, cf. 19 n.

αριστα is followed by *εστω* in the other sources, as in Jouanna's text.

15 μηθεν with MV: *μηδὲν* C' GaL and Gal. *Hipp. Epid. VI*, printed by Jouanna.

15–16 ἐπικουωνει: C' MGaL have *ἐπικουωνέει*, printed by Jouanna, while Gal. *Hipp. Epid. VI* agrees with the papyrus. V has *κουωνέει*.

15, 17 There may be a trace of a horizontal stroke at the end of each of these lines; cf. 13.

16–17 προσ|εστα λ' μενα. The participle (-)εσταμένος is familiar, and the omission of a second triangular letter (λ) was an easy corruption. The reading after correction matches that of C', accepted by Jouanna; MV have *προεσταλμένα* and GaL *συνεσταλμένα*.

19 ο|μοχρων. ω is damaged on the right, but ο cannot be read and would in any case not fit the space. For the formation in three movements (left-hand arc, descending oblique, right-hand arc), cf. 16 *κουωνει*. M has *δμόχροον*, printed by Jouanna, while V and GaL have *δμόχροον*; C' LatI have *δμόχροον* before *πάν*. The corruption may be due to the influence of the familiar form *δμόχρων*: perhaps ω was written over -οο- in the

exemplar and the scribe took it as a correction of the first omicron. For interchange of ω and ο, cf. Gignac, *Grammar* i 275–7' (WBH).

φαινεται with M, printed by Jouanna: *φαίνεται* C' VGaL. The subjunctive is at first sight difficult to explain. Jouanna follows Reinhold in restoring (ῆν) before *πάν* to account for it. The appearance of *φαινεται* in this papyrus may shed new light on its origin. The exemplar had another irrational subjunctive (-ηται for -εται) shortly before in *γίννηται* (14 n.). There the curious -ηται was eliminated when the right verb (*ρήγνηται*) was restored, but here the verb is the correct one and the corruption, being confined to the termination, has gone unnoticed. The new variant in line 14 may suggest that M's *φαινεται* is not a unique preservation of the truth but rather the last trace of a tendency in part of the tradition hereabouts to write -ηται where -εται is required. Reinhold's *καὶ (ῆν)* would be in danger of being misunderstood as "even if" (WBH).

19–20 καὶ | [ο]μαλες: not found in any other witness, and not admitted to the text by Jouanna. The following sentence includes *καὶ ὁμαλόν*, in the sequence *καὶ ὁμαλόν καὶ λείον καὶ ὡς ἦκιστα δυεῶδες* (ii 130.10–11 L. = 22.7–8 J.); in that passage, C' StephL have *καὶ λίον* (for *λείον*) before *καὶ ὁμαλόν*, and M omits *καὶ ὁμαλόν*. 'Perhaps *καὶ ὁμαλές* was written there in part of the tradition, but dropped out by parablepsy (cf. 11 above) and was restored in the margin, whence it was copied into the text in the wrong place in this copy or one of its ancestors' (WBH). Jouanna 22 n. 2 notes that *ὁμαλής* is found in part of the manuscript tradition at *Coac.* 273 (v 642.18 L.) in a passage taken from *Prog.* where the tradition of *Prog.* has *ὁμαλόν* (ii 126.1 L. = 17.7 J.).

D. LEITH

5224–6. DIOSCORIDES

These three manuscripts of Dioscorides' *De materia medica* (henceforth *MM*), assigned to the second, third, and fourth centuries, double the number of ancient copies published to date, making it and the Hippocratic *Aphorisms* the known medical works best represented on papyrus. The other ancient copies are P. Mich. inv. 3 (MP³ 346), of the mid-second century, containing an extensive passage from *MM* 2.76 (i 151.18–152.3, 153.15–157.23 W.); P. Aberd. 8 (MP³ 347), a papyrus of the second century from the Fayum, preserving parts of *MM* 3.130–31 (ii 140.8–141.2 W.); and P. Köln VII 312 (MP³ 347.01), of the late first or second century, with parts of *MM* 4.1–2 (ii 168.6–10 W.).

Four further papyri, P. Leid. X, P. Ant. III 123, PSI inv. 3011, and 5242 below, preserve excerpted sections or abridgements of *MM*, or text which otherwise coincides with parts of it. P. Leid. X (MP³ 1997), a papyrus codex assigned to the third or fourth century (see R. Halleux, *Les Alchimistes grecs* i (1981) 22–4), contains in its final section (pp. 14.15–16.28), at the end of a list of alchemical recipes, a series of excerpts on minerals taken from *MM* 5, and introduced by the heading *Διοσκορίδου ἐκ τοῦ περὶ ὕλης*. P. Ant. 123 (MP³ 2388.1), a papyrus codex of the sixth century, preserves a pharmacological compilation that derives much of its content from *MM* but also contains some non-Dioscoridean material (cf. e.g. fr. 4(a)). The ordering of the plants seems to have conformed to some extent to Dioscorides' original, non-alphabetical scheme (cf. esp. fr. 7(a), 8(a), 7(b), 8(b)). The Dioscoridean sections show clear signs of abridgement, paraphrase, and extensive re-wording. PSI inv. 3011 (MP³ 2388), of the third century, preserves a list of views associated with certain named authorities on the medical properties of various plants. Dioscorides makes the same statements about these

plants, in the same words and in the same order, at *MM* 1.73 (i 73.5–7 W.), 77 (i 77.18–22 W.), 79 (i 79.5–6 W.), and 81 (i 79.19–21 W.), but without naming the authorities (though in the last case he attributes the view to *ἐνίοι*). Finally, 5242 gives instructions for the thickening of oils resembling those of Dioscorides, though employing different measures.

There is no sign that any of the new papyri carried illustrations. In each, as in P. Aberd. 8, the preserved text bridges chapters of *MM* on individual plants, showing that illustrations were not found between the entries. Nor does reconstruction of the text at any point indicate that there was variation in the indentation of the columns: there were clearly no illustrations within the body of the column. While it remains possible that whole column widths were given over to illustrations, the intercolumnium preserved in 5226 counts against this possibility. Moreover, the only extant example of an illustrated herbal on a papyrus roll, P. Tebt. II 679 + P. Tebt. Tait 39–41 (MP³ 2094, second century), depicts each of its plants directly above the relevant text, as in the codex herbal P. Johnson + P. Ant. III 214 (MP³ 2095) and in manuscripts C and N of Dioscorides. This is also the only arrangement mentioned by Pliny in his description of the illustrated herbals of Crateuas, Dionysius, and Metrodorus (*NH* 25.8 *pinxere namque effigies herbarum atque ita subscripsere effectus*). The absence of illustrations in these papyri does not of course disprove the belief of J. M. Riddle, *Dioscorides on Pharmacy and Medicine* (1985) 177, that *MM* was originally illustrated, but there is as before no evidence in early copies to support it.

I am extremely grateful to Dr Marie Cronier, who is preparing a much-needed new critical edition of Dioscorides, for her kindness in providing detailed comments on earlier drafts of the following three papyri. She also generously shared with me her collations of the relevant portions of text, as well as the results of her unpublished research on the manuscript tradition. A number of her advances over Wellmann's editorial work on Dioscorides have informed the following papyrus editions. Among the most significant is her use of several important copies not used by Wellmann, notably G (Vat. gr. 284, of the tenth century), M (New York, Pierpont Morgan cod. M 652, likewise of the tenth century), W (Athous Magnae Lavrae Ω 75, of the eleventh), and J (Paris. gr. 2260, of the fifteenth). For the components of M (Ma, Mb, and Mc), see M. Cronier, *REG* 125 (2012) 95–130. Cronier has also established that Wellmann's H, A, and Di are of no value for the establishment of the text, having been copied from extant manuscripts; I have therefore not recorded their readings. Cf. further M. Cronier, 'Quelques aspects de l'histoire du texte du *De materia medica* de Dioscoride: forme d'origine, remaniements et révisions à Constantinople aux X^e et XI^e siècles', in V. Boudon-Millot et al. (edd.), *Ecdotica e ricezione dei testi medici greci* (2006) 43–65; ead., 'L'Herbier alphabétique grec de Dioscoride: quelques remarques sur sa genèse et ses sources textuelles', in A. Ferraces Rodríguez (ed.), *Fito-zooterapia antigua y altomedieval* (2009) 33–59; and ead., 'Le Dioscoride alphabétique latin et les traductions latines du *De materia medica*', in D. Langslow, B. Maire (edd.), *Body, Disease and Treatment in a Changing World* (2010) 189–200.

D. LEITH

5224. DIOSCORIDES, *DE MATERIA MEDICA* 1.61, 63–4

72/13(d)

6.7 × 6.3 cm

Fourth century
Plates II (→), III (↓)

A fragment of a papyrus codex containing remains of eight lines on the → side and nine on the ↓ side. Only the outer margin (see below) is preserved, extending to 2.6 cm on the → side, and *c.* 2.5 cm on the ↓ side.

The text is written in iron-gall ink in a medium-sized formal hand. The hand slopes forward and is generally bilinear, with only ρ and υ projecting below the lower line. (φ and ψ do not occur.) There are some features of the Severe Style, especially its narrow ε and c. ω is broad and rounded. The arms of κ are separated from its upright. Cf. *GMAW*² 49 (XXXIV 2699), assigned to the fourth century; *GBEPP* 12a (XI 1352), 12b (PSI X 1171), also assigned to the fourth century.

A heading at ↓ 4, placed on a separate line in *ekthesis* and preceded by (forked?) paragraphus, signals a new chapter and specifies the name of the plant to be discussed. The name *κύρνα*, as the first word of the new chapter, is repeated at ↓ 5. This feature is not found in any other papyrus fragment so far published, but several of the later manuscripts have headings, most often introduced by *περί* (especially FHADi).

As the columns are very narrow, with an average of seventeen letters per line (width roughly 7 cm), the codex must have contained two columns per page (cf. 5219 and 5227). The chapters preceding that on *κύρνα* (1.61–3) constitute the end of a discrete section on different forms of perfumed oil, and it is not certain that each of its subsections was given a separate heading in the same way as the chapters on individual plants. The text between the preserved portions would fill a further 34 lines without headings, on the assumption that each subsection describing a different oil was begun on a new line, or a further 36 lines with headings. A column height of 41 or 43 lines (*c.* 22 or 23 cm) falls well within acceptable limits. Each of the surviving portions of text will then have formed part of the outer column of its page.

There are no punctuation marks in what survives. Inorganic diaeresis is used at → 5.

At → 3 and 7, the papyrus gives several viable readings not adopted by Wellmann and previously known only from G or G and J.

→ (i 56.14-17 W.)

↓ (i 57.5-7 W.)

	ανθ]ρακας και γα[γ (1.61.2)] . [.] . . [
	γραινας ευ]ν καρδαμω		και αμαρακ[νω την	(1.63)
	μω προς τε ρ]ιγη περιο		δυναμιν [
	δικα και προ]ς τρομους		ς[μ]υρνα [	1.64.1
5	τους απο τω]ν ιοβολων	5	ςμυρνα [δακρυον εστι	
	θηριων γιγ]γομενους		δενδρο]υ γεννωμενου	
	εν συγχιριμ]ασι επι		εν αραβ]ια [ομοιου τη	
	θεμα τε σκο]ρπιοπλη		αιγυπτ]ι[ακη ακαν	
			θη ου ε]γκοπτομενου	

→

3 περιο|[δικα. The papyrus agrees with G alone in omitting the article: τὰ περιοδικά McWFJ.

4 J omits πρόσ.

5 τούς GJ: καὶ τοὺς F: καὶ πρὸς τοὺς McW. To judge by the space available, the papyrus agreed with GJ.

6 G's γιγνομένους is perhaps best suited to the available space, and gives good sense if καί was not present at 5 (see n.). Other readings: γενομένους McJ, γινομένους δηγμοὺς W, δακνομένους F.

7 συγχιριμ]ασι, with G alone: συγχιρίματι McWFJ.

↓

1 The traces are meagre. Of the first letter, a vertical extends below the notional lower line. Perhaps ανα|[λο]χ[ου]γ τ[ω] κροκινω could be restored, with the other manuscripts, but this is far from certain.

2-3 την] | δυναμιν: G alone has τῆ δυνάμει. All other witnesses agree with the papyrus.

5-6 δάκρυνόν ἐστι FGJ: ἔστι(ν) δάκρυον McW. I have restored the reading of FGJ merely *exempli gratia*.

D. LEITH

5225. DIOSCORIDES, *DE MATERIA MEDICA* 3.17-18

50 4B.33/J(6-7)b

Fr. 1 5 × 8 cm

Second century
Plate V

Three fragments, with writing running along the fibres. The back contains remains of two columns, with an intercolumnium 2-2.5 cm wide, of an unidentified text written in a badly faded hand and running in the same direction. Fr. 1+2 have on the front remains of two columns, the second being represented by a small trace (paraglyphus?) just above the level of line 5. The left (fr. 2) and right (fr. 1) margins of the first column survive, the former to a width of 0.2 cm, the latter to c. 0.5 cm. The supplements give a column width of c. 8.5 cm. Fr. 3 has a blank space extending to 0.8 cm below its last line, but the remains of the text on the back

suggest that this represents a blank portion of a line rather than the lower margin. There are between 28 and 33 letters to a line, with an average of 30.6.

The new chapter at fr. 1+2.8 begins on a new line, in *ekthesis* and preceded by a paragraphus. A subsection also begins on a new line (4).

The text is copied in a small, upright, informal round hand, with liberal use of right-facing serifs on the feet of verticals. The hand is roughly bilinear, with ρ extending below the lower line, and φ projecting far above and below. The cross-bar of ε is long, often touching the following letter. Occasional ligatures are found (cf. e.g. λα at fr. 1+2.11, ει at 13). The hand may be placed in the second century, probably earlier rather than later in that century. Comparable are *GMAW*² 22 and 24 (XXVI 2441, XVIII 2161), both assigned to the second century, and there are broad correspondences to *GLH* 13b (P. Lond. Lit. 132), assigned to the first half of the second century.

Organic diaeresis is used at fr. 1+2.9. Apostrophe marks elision at fr. 1+2.1. Itacistic spellings are found at fr. 1+2.9, 11, and 13.

Fr. 3 remains unidentified, and may preserve a variant text.

The text is generally good. There is a possibly correct new reading at fr. 1+2.14.

Fr. 1+2 (ii 24.1-II W.)

Fr. 3

		] δ' ουρα	(3.17)] . [
	αγουσι και κοιλιαν ιστασι φθ]ιρικοις τε			] μμωδ[
	και	] ]		] νηδ[
	γινεται δε και αγρια] ακ[ανθ]α ομοια] [
5	σκολυμω ακανθωδη]ς βραχυτερα της			
	εν παραδεικοις και η]μερου δυναται δε			
	και ταυτης η ριζα οσα κα]η η προ αυτης			
	ανω]γισ οι δε ονωιδα καλο]υσι κλωνε[ς	3.18		
	σπιθαμ]ιαιοι και μει]ζονες θαμνοϊδε[ις			
10	πολυγο]νατοι μασχα]λας τε εχοντες πολ			
	λας κ[εφαλια περιφερ]η φυλλαρια μει]κρα			
	λ[επτα ωσπερ φακου π]ρος τα του πηγανο]υ			
	η λωτου του εν χορ]τοκοπειοις [υ]ποδ[α			
	σεια και ουκ] αηδης αλ[μεινεται			
15	δε προ του ακανθοφ]υης[αι			

Fr. 1+2

2 ιστασι restored with PW: ἰστῶσι EF: ἰστησι CN.

3 φθ[ι]κοικος τε | [και. Following ἰστησι, CN have και ῥήγμασι εὐθετοῦσιν (-θενοῦσιν C). Other manuscripts agree with the papyrus in reading something beginning φθιτικοῖς τε και here. Then PF have σπάσματος ἀφέλιμοι και ῥήγμασι, E has σπάσματος και ῥήγμασι εὐθετοῦσιν, and W ῥήγμασι και σπάσματος εὐθετοῦσι. The papyrus appears to have had something shorter.

4 αγρια] restored with PEWF: *agrestis* DL. There is insufficient space for the variant ἀγριωτέρα of COrib.

ακ[ανθ]α with EWOrib.: ἄκανθος CP: ἄκανθ() F.

4-5 ομοια | [σκολυμω with PEWFOrib.: οἶα σκολύμω ἐμπερῆς C.

5 της with PWFOrib.: τοῦ C: τοῖς E (της in ras.).

7 ταυτης η restored with CEW: ἡ ταύτης PE.

8 ανα[νις οι δε ονωιδα καλο]υσι restored with PFG (δνωις G). MaW give δνωις: οἱ δὲ δνωιτιδα καλοῦσι (καλοῦσιν Ma). E has ἀμωνιδος: οἱ δὲ ἀνωις οἱ δὲ δνωιτιδα καλοῦσιν, DL *de anomida. onomida. quem multi onomida appellaverunt*, and Orib. ἀνωις (οἱ δ' δνωιτιδα).

8-9 κλωνε[ς] | σπιθαμ[ιαιου και μει]ζονες with the majority: G has κλώνας ἔχει και σπιθαμιαίου μειζονας.

10 τε with E, om. PMaWFOrib. G has ἔχοντας μαχάλας πολλὰς in place of μαχα]λας τε εχοντες π[ολ]λλας.

11 κ[εφαλια with PGFOrib. There is not enough space for E's και κεφάλια, or for κεφάλια τε as given by MaW.

11-12 μει[κρα] | λ[επτα with MaEWGOrib.: ἐπτά· μικρά P: ζ' μικρά F.

12 ωπερ φακου restored with E (del. E²) MaWGDL: om. PFOrib.Arab. The available space indicates that the papyrus had the words. Wellmann does not include them in his text.

13 η λωτου του restored with the majority: ἡ πρὸς τὰ τοῦ λωτοῦ G.

14 Between ὑποδασέα and ἀλμύεται, various readings are attested: ποώδη και οὐκ ἀηδίζοντα E: ποώδη και οὐκ ἀηδῆς ὄζοντα W: και ποώδη οὐκ ἀηδῆς ὄζοντα G: ποώδη και οὐκ ἀηδῆ Ma: εὐώδη και οὐκ ἀηδῆ Orib.: εὐώδη PF. WBH suggests that the papyrus may have had, as a viable variant, ποώδης (or εὐώδης) και οὐκ ἀηδῆς, of the plant. The feminine singular endings would be easily corrupted due to the influence of the context.

15 ακανθοφ]ηρησαι with EW: ἀκανθοποιῆσαι PFMaG: ἀκανθοφορῆσαι Orib.

Fr. 3

2 A possible restoration is α]μμωδ[εσι, found at 3.15.1 (ii 22.3 W.), but line 3 does not correspond to the text transmitted for that passage.

D. LEITH

5226. DIOSCORIDES, *DE MATERIA MEDICA* 3.71-4

42 5B.78/F(7)a

8 × 22 cm

Third century

Three contiguous fragments of a papyrus roll preserving portions of two columns written across the fibres. No margins survive. On the front, parts of two columns of cursive, with text running in the same direction. There is a gap between two strips of vertical fibres at the foot of col. ii, with the horizontal fibres underneath exposed; the scribe wrote across it at 23 and 24 but avoided it at 25 by leaving a space blank between ξηρ and αι. The intercolumnium is 2.5-3 cm wide. Lines contain between 39 and 44 letters (average 42-3), giving an approximate

reconstructed column width of 14 cm, a remarkably high figure for a prose text: cf. Johnson, *Bookrolls* Table 3.1, pp. 162-74, and for a similarly broad column in a copy of a prose text on reused papyrus (and a similar informal hand, assigned to the third century), cf. LXIX 4738 (Lucian). The column height will have been about 22.5 cm: see below.

The hand is a medium-sized cursive assignable to the third century: cf. the first hand of XL 2895, of 269/70.

Each section begins on a new line and is preceded by a paragraphus projecting into the margin and underneath it a *diple obelismene* ranged with the text. No further means of articulating the text are in evidence. There are itacistic spellings at ii 5 and 15, and diaeresis on initial ι at ii 7.

The alphabetized manuscripts C and N have several extra chapters, not found in the principal manuscripts that preserve Dioscorides' original arrangement. One such chapter, on the plant *δελφίνιον*, is given (in square brackets) between those on the *δαῦκος* and the *πύρεθρος* (MM 3.72 and 73) in Wellmann's edition (ii 84.6-22). As Dr Cronier informs me, it was placed there for the first time in v (Marc. gr. 271), where it is copied from a marginal annotation in H (Pal. gr. 77), both manuscripts being of the second quarter of the fourteenth century. Cronier, in A. Ferraces Rodríguez (ed.), *Fito-zooterapia antigua y altomedieval* (2009) 33-59, esp. 37-44, has shown that these chapters were not included by Orbasius in his *Collectiones medicae*, and that Raeder was accordingly mistaken in printing them in his edition of that text. Hence there is no reason to suppose that this extra chapter on the *δελφίνιον* was copied in the present papyrus in the lacuna following the surviving part of col. i. The dimensions of the papyrus seem to confirm that it was not included. The chapter on the *δαῦκος* would be expected to end about eleven lines after i 18. To judge by the number of lines preserved in col. ii, the column would then be about 30 lines high, if we include spaces occupied by *diplai obelismenai* and paragraphi. The extra chapter on the *δελφίνιον* would fill an additional eighteen lines, including an extra line for the *diple obelismene* and paragraphus that would have signalled the beginning of the new chapter. Since the 29 lines preserved in col. ii, again counting spaces taken up by *diplai obelismenai* and paragraphi, occupy an area some 22 cm high, 18 lines should take up an area about 13.5 cm high, giving a total column height of 35.5 cm. Such a column height is unattested, whereas a column of 30 lines, c. 22.5 cm high, is unexceptionable for a third-century copy of a prose text (see Johnson, *Bookrolls* 119-25, with Table 3.3, pp. 185-200). We can be confident, then, that the extra chapter on the *δελφίνιον* was not copied at this point, and that the column height was therefore about 22.5 cm.

The papyrus is of some textual interest. It points to a solution to a textual problem at i 13, and gives viable new variants at i 14, ii 3-4, 7, and 17. A sentence has dropped out through homoearcton at ii 19, and there may have been another example of *saut du même au même* in the missing part of i 12. An apparent correction at i 17 may be intended to restore a reading familiar from later copies.

Col. i (ii 82.5-83.8 W.)

] α.
 κ]αι λι (3.71)
 θους θρυπτει και ικτερον αποκαθαιρει των δε φυλλω]ν το
 αφειψημα πινομενον γαλα αγει και τας εκ τοκετω]ν γυ
 5 ναικας]
]
]
]
]
]
 10]
 δαυκος ο μεν τις καλειται κρητικος μαραθω] φυλλα
 3.72.1
 εχων ομοια μικροτερα δε καυλον δε σπιθα]μιαιον
 σκειαδιον ομοιον κοριανδρω ανθη λευκα] δη του
 του ο καρπος δαυκος λευκος δριμυς εν τω μα]ησασθαι
 15 ευωδης ριζα δακτυλου το παχος το δε μηκος σπιθ]αμης
 γενναιται δε εν πετρωδεσι τοποις και ευηλιος ο] δε τις
 αυτου εστι σελινω αγριω παραπλησιος] δεωδης
 και ευωδης δριμυς και πυρωδης γενομενω διαφε]ρει δε [
 20]
]
]
] ν
 25]
]
]
]

Col. ii (ii 85.1-86.17 W.)

)—
 πυρεθρον πο]α καυλον ανιεισα και φυλλα ωσπερ δαυκον
 3.73
 αγριον η μαρ]αθον σκειαδιον δε ως ανηθου τροχοειδες
 ριζα δακτυ]λου μεγαλου το παχος μακρα γευσαμενω πυρω
 5 τικωτατον [φλεγματος επισπαστικη διο και ταις οδονταλ
 γειαις βοηθ]ει μετ οξους εψηθεισα και διακλυζομενη
 αγει δε και φλ]εγμα διαμασθεισα συγχριομενη δε συν
 ελαιω ιδρωτ]ας κινει ποιουσα προς τα χρονια ριγη και προς
 τα εψυγμεν]α δε η παρειμενα μερη του σωματος α
 κρωσ αρμο]ζει
)—
 10 λιβανωτις [διςση η μεν τις καρπιμος υπ ενιων δε ζεα η καμ
 3.74.1
 ψαγμα κα]λουμενη ης ο καρπος καχρυ καλειται φυλλα
 δε εχει μα]ραθω ομοια πλατυτερα δε τροχοειδως επι γης
 ε]τρωμεν]α ευωδη καυλον δε οσον πηχεως και μει
 15 ζονα μα]χαλας εχοντα πολλας και επ ακρω
 σκειαδιον [εφ ου καρπος πολυς λευκος εοικως σφονδου
 λι]ω περιφ]ερης γωνιας εχων δριμυς ρητινιζων
 εν] τω μα]ησασθαι επικαιων την γευσιν ριζα δε λευκη
 ευ]μεγεθ]ης οζουσα λιβανου
)—
 η δε λεγ]ομενη ακαρπος κατα παντα ομοια ουσα ταις προειρη
 20 3.74.2
 μεναις ου]τε καυλον ανησιν ουτε ανθος ουτε σπερμα
 φυεται δ]ε εν πετρωδεσι και τραχεσι τοποις πασων δε κοινως η
 πο]α κατα]πλασθεισα λεια αιμορροιδας στελλει φλεγμαινου
 ςας και δακ]τυλιον πραινει και κονδυλωματα και χοιραδας
 και τα δυσπε]πτα των αποστηματων συμπεσσει αι δε
 25 3.74.3
 ριζαι ξηραι [συν μελιτι ελκη ανακαθαιρουσι και στροφους
 ιωνται κα]ι

Col. i

1 The final letter has a stroke extending into the intercolumnium, as at 16, 17, 21, 24, 26, and 27.

5-9 The rest of this chapter on the plant *ἵππομάραθρον* (ii 82.7-11 W.) would fill four more complete lines with a remainder of c. 14 letters, corresponding very well to the available space.

10-11 Line 11 is probably the first of the new chapter on the plant *δαῦκος*. Line 10 will then have contained only a paragraphus and *diple obelismene*: cf. ii 1, 10, and 19.

11 F has *ἔστι* for *καλεῖται*. N omits *ὁ μὲν τις καλεῖται Κρητικός*, and Mb omits *Κρητικός*.

11-12 The space available at the start of 11 suggests that the word order matched that of E, *μαράθρω φύλλα ἔχων ὁμοία*, as restored. The remaining manuscripts show much variation (*μαράθρω ὁμοία ἔχων τὰ φύλλα* P; *μαράθρω ἔχων τὰ φύλλα ὁμοία* F; *μαράθρω ἔχων (-ον N) φύλλα ἐμφερῆ* NMbW). Line 12 is then too long for the transmitted text of any manuscript. I have printed an *exempli gratia* restoration with *καὶ λεπτότερα* omitted. This gives a suitable line length. The second *δέ* is omitted in N and Mb.

13 *κκείαδιον* restored as at ii 15; I. *κκιάδειον*.

λευκά] *δη του[του*. After *λευκά*, NMbW have *ἔστι (-τιν Mb) δὲ τούτου*, and PEF *ἐν δὲ τούτοις*. The trace on the edge is the end of a stroke low in the line. WBH suggests the following:] *δη* after *ἄνθη λευκά* is likely to be *εὐ]ώδη*, followed by *τούτου ὁ καρπός* without connecting particle. Cf. for the adjective 1.95 (i 86.5 W.) *ἄνθη λευκά*, *βοτρυνώδη*, *εὐώδη*, 2.165 (i 230.14 W.) *ἄνθη λευκά*, *εὐώδη*, 3.44.1 (ii 56.3 W.) *ἄνθη δὲ ἐμπόρφυρα*, *ὑπόλευκα*, *εὐώδη*, 49 (ii 64.1 W.) *ἄνθη χρυσοειδῆ*, *δριμέα*, *εὐώδη*. And for *τούτου ὁ καρπός* without connecting particle, cf. 1.93 (i 85.12 W.), 3.52.2 (ii 66.5 W.), 1.57 (ii 164.1 W.), 4.14.2 (ii 180.5 W.), 51 (ii 207.5 W.), 141 (ii 285.5 W.), 143 (ii 286.15 W.), 154 (ii 300.12 W.); preceded by *καὶ* at 3.156.2 (ii 163.9 W.). Both *ἔστι δὲ τούτου ὁ καρπός* and *ἐν δὲ τούτοις ὁ καρπός* are unparalleled. The archetype of the later tradition may have been damaged here: *ε[]δ[]τουτο[]* or the like could have been interpreted as *ἔστι δὲ τούτου* by one copyist and as *ἐν δὲ τούτοις* by another. (For a similar case of corruption caused by damage to the archetype of the later tradition, cf. LXXVIII 5150 fr. 2 ii 4-7 n.)

14 *δαρυς λευκος δριμυς* restored arbitrarily with W (NMb have the same word order, but with *δύς* for *δαρύς*): *λευκός δριμύς δαρύς* PEF.

μασ]ησασθαι διαμασᾶσθαι PEF, *μασᾶσθαι* NMbW (dia superscr. W). At ii 17, the papyrus has *μασ[* where all the remaining witnesses have *διαμασᾶσθαι* or *διαμασῆσασθαι*. It seems likely that the same form stood in both places, as restored, and it may be the correct reading.

15 For reasons of space, I have restored *εὐώδης* with PF: *καὶ εὐώδης* EW: om. NMb.

17 *αυτου* restored with the majority: *αὐτῶν* W.

17-18 The space would accommodate something like PF's *ἀρωματώδης καὶ εὐώδης δριμύς καὶ πυρώδης γενομένης*, of which the latter part is printed in 18. Other versions are much less suitable from this point of view: *δριμύς καὶ εὐώδης γενομένης καὶ πυρώδης* W, *εὐώδης δριμύς γενομένης καὶ πυρώδης* E. (NMb do not have this sentence.) In that case, something has gone wrong with *ἀρωματώδης*. Of the first letter there is only a small trace at mid-height. The traces of the third preserved letter suggest a large *ε* but there seems to have been a correction, perhaps a cancel stroke. The scribe may have written *αρωμ]αδ[ε]ωδης*, with *δ* for *τ*.

Col. ii

1 *πυρεθρον* with CNEWGOrib.: *πύρεθρος* PF.

ανεισα και φυλλα restored with the majority. CN have only *ἀνίησι*.

1-2 *δαυκον] | αγριον* restored with CNEOrib.: *δαῦκος ἄγριος* PFW: *δαυκοῦ ἀγρίου* G.

2 *η* with CNEWGOrib.D1 (*αιτ*): *καὶ* PF.

κκείαδιον restored as at 15 below; I. *κκιάδειον*.

3 *ρίζα* with N (C is damaged) and Orib.: *ρίζα δὲ* PEF: *ρίζαν* WG.

μεγαλου restored without the article, as in PGF: *τοῦ μεγάλου* CNEWOrib. The line length may suggest that the article was not included, but this should perhaps not be pressed.

3-4 The papyrus is alone in giving *πυρω]τικωτατον: πυρωτικωτάτη* CNPEFOrib.: *πυρωτικωτάτην*

W: *πυρώδης* G. 'The neuter of the superlative is idiomatic in such expressions: cf. West on Hes. *Th.* 864, citing e.g. Thuc. 1.138.5. It could easily be corrupted to the feminine' (WBH).

4 *επισπαστικη* restored (for reasons of space) with PEFOrib. (*επισπαστικη* C): *ἐπισπαστικῆν* W: *ἐπισπαστικωτάτη* N. G has *καὶ κανκτική* in place of *φλέγματος ἐπισπαστικῆ*.

και ταις restored (for reasons of space) with CNEWG: *ταῖς* PE.

4-5 *οδονταλ]γειαις*: I. *-γίαις*.

6 *και* with the majority: om. G.

6-7 The papyrus alone has the dative *ελαιω: μετ' ἐλαίου* NPEFWG (με[C). The available space at the end of 6 might suggest that *εν* stood there.

8 *τα εφυγγμεν]α*, with CNEWG: *ἐφυγγμένα* PF.

10-11 [*δισση ... κα]λουμένη*. Ma omits *δισσῆ*, while Orib. has just *ἡ μὲν τις κάρπιμος*. In CNMb, the whole phrase is replaced by a non-Dioscoridean list of synonyms, with chapter heading *κάχρον*.

12 *δε* (pr.) with NPEWF: om. CMbMaOrib. G has *φύλλα ἔχουσα*.

μα]ραθω ομοια with CNPMBMaWGFOrib. (-θρω F): *ὁμοία μαράθρω* E.

As seems demanded by the available space, I have restored *πλατύτερα δε* with CNMbMaEWGD1: *πλατύτερα δε καὶ παχύτερα* PArab.: *παχύτερα δε καὶ πλατύτερα* F: *παχύτερα δε* Orib.

13 *ευωδη* restored with the majority: om. CNMb: *εἰς δε εὐώδη* G.

13-14 *καυλον δε οσον πηχεως και μει]ζονα* restored with CNMbMaWOrib. (minor variants: *κύκλον Mb, πήχεις Ma*). *ἡ* may have stood in place of *καὶ*, as in PFArab. Other variants: *καυλοὺς δε ὅσον πήχεις* E; *καυλὸν δε ἀνίησι πηχεως τὸ ὕψος ἡ καὶ μείζω* G. D1 gives *virga in medio habens longa amplius cubito*.

15 *κκείαδιον* (I. *κκιάδειον*) [*εφ ου* with MaD1 (*capitellu, in quo*): *κκιάδια* NMbPEWFArab. (*κκιάδια* GOrib.): *κκιάδι* C.

Ma alone has the article before *καρπός*, and it is possible that the papyrus did likewise, given its agreement with Ma in the singular at the start of the line.

πολυς restored with the majority: om. MaGD1. Considerations of space are not conclusive, but would tend to suggest that the papyrus agreed with the majority in this case.

17 *εν]* restored with the majority, but *εν | δε]* (MaW) is also possible.

μασ]ησασθαι διαμασᾶσθαι CNMbPEFOrib.: *διαμασῆσασθαι* MaW. G has *διαμασᾶσθαι* with an erasure after *μασ*. Cf. i 14 n.

λευκη (restored) CNMbPFWDIArab.: *λεπτή* MaWgr: *λευκή καὶ λεπτή* E. G has *ρίζα δε ὕπεστι λευκή, εὐμεγέθης*, Orib. *ρίζα εὐμεγέθης*.

18 *εν]μεγεθ]ης οζουσα λιβανου* restored with Wellmann, but there would be room for the *ὑπεστι* that follows *εὐμεγέθης* in some witnesses (corrupted to *υποσι* in CNMb).

19 The papyrus omits *ἡ δε ἑτέρα ... λευκήν* (ii 86.6-9 W.), apparently by *saut du même au même*.

19-20 *κατα παντα ... ταις προειρη]μεναις* follows *σπέρμα* in E (Wellmann's report is thus inaccurate).

20 After *καυλόν*, E alone adds *οὔτε καρπὸν*, for which there is not space in the papyrus.

21 *δ[ε εν* restored with the majority: *δε* was omitted by Mb, and deleted by the second hand of E. The final traces are indecisive.

πασων δε κοινως restored with PF: *πάντων δε κοινῶς* E: *πασῶν δε* MaD1 (*omnium*): om. CNMb. G has an insertion from Galen.

21-2 *η] | ποα κατα]πλασθεισα* with the majority: *καταπλασθεισα δε ἡ ποα* CNMb.

22 *λεια* restored with the majority: om. CNMb.

22-3 *αιμορροιδας στελλει φλεγμαινου]ζας και δακ]τυλιον πραννει* restored with E and CNMb (*αἱμορροΐας* CN, *-ραγείας* Mb). Other readings: *αἱμορροΐδας στέλλει φλεγμονάς τε τὰς κατὰ δακτύλιον πραΐνει* PFArab.: *αἱμορροΐδας φλεγμαινούσας καὶ δακτύλιον πραΐνει στέλλει* MaW: *αἱμορροΐδας στέλλουσι καὶ δακτύλιον φλεγμαινόντα πραΐνουσι* G: *emorrhoidas proibet, tumorem ani tollet* D1.

84/62(c) + 84/67(a)

Fr. 1 4.8 × 11.6 cm

Fifth/sixth century

Remains of a leaf of a double-column papyrus codex (cf. 5219, 5224). Portions of the inner and outer margins survive, together with the upper margin of the inner column on each page. The upper margin survives on the → side, which comes first, to a depth of 1.4 cm, and on the ↓ side to a depth of 0.9 cm. The external margin is 4.3 cm wide on the ↓ side, and 3 cm wide on the → side. A line holds between 10 and 17 letters, with an average of 13–14. The original column width was about 9 cm. A column will have held 26 lines, giving a column height of about 23.5 cm. Six leaves could hold the text from the beginning of the work to the start of 5227 col. i.

The hand is a large sloping majuscule with some decoration. *εθoc* are narrow, and *κ* has its arms separated from the upright. The scribe sometimes uses smaller letters at the end of a line where it would otherwise be over-long, but the right-hand margin is still quite irregular. Cf. P. Ant. III 157 (*GBEBP* 23a), assigned to the fifth/sixth century.

Blank spaces are used to mark sense breaks (i 2, ii 3, iv 6). A coronis marks a section division at i 4 and iii 1. Initial *υ* receives a diaeresis (ii 11). A bar stretching into the margin can be used for *υ* at line end (col. ii *passim*). *ι* is written for *ει* at i 3 and *οι* for *υ* at ii 9. Elision is unmarked at ii 11, iii 10, 11, and apparently iv 9.

The text offers a good but hitherto neglected variant at ii 2 and appears to have had another such at iv 9. An attractive new variant appears at iv 1. There is a possible example of omission by haplography in the lost part of iv 6, and a corruption shared with nearly all the other manuscripts at the end of the same line.

The collation text is the critical edition of the opening part of the book included by F. Gärtner, 'Prolegomena zu einer Edition von Galens Schrift *de locis affectis*', *Galenos* 4 (2010) 47–80, on pp. 68–80 (cited by Kühn's page and line, given in Gärtner's margin). I am extremely grateful to him for sharing with me his complete collation of the relevant passage. The manuscript sigla are Gärtner's, and the notes present a collation with his text. For full details of variants and the manuscripts attesting them, Gärtner's article and his forthcoming edition of *Loc. Aff.* 1–2 for the *Corpus Medicorum Graecorum* should be consulted.

Col. i (fr. 1 →)

χηλον [της κυστε
ως^υ αμ[α δε ποδη
γησις [τοις ουροις
5 } ει δε τα [μεν του λι
θου ση[μεια μη φαι
νοιτο [προγεγενη
εθαι τ[ης ιχυουριας

viii 11.8 K.

Col. ii (fr. 2 →)

τη]ς των [
προγεγονο]των [
γνωσεω]ς^υ ει με[
γαρ ητοι κα]τα κυστ[ι
5 η νεφρους] ειη τι
προγεγε]νημε[υ]ο

viii 12.1 K.

αιματ[ος δε τις εκ
κρισις [εικος ειναι
10 θρομβ]ον εμφρατ
το]γτα τ[ην ουρη
θρ]αν [

παθος ως ε]ξ αυτου
δυνασθα]ι προσδ[ο
κησαι π]οιον ηθροι
10 εθαι τ]οουτον τε
και το]ιουτον υφ[οου
τε και] ριου φρα
χθην]αι τον πορο
εικος ε]στιν δυνατο
15 ειναι στο]χαομεθα
δια την α]ιτιαν
ταυτην επι]ςχεθ[η

Col. iii (fr. 2 ↓)

μηδ[ενος δε τοιου
το]υ προγηγα
μενου [την διαιταν
εξετ[αομεν ει
5 αργο]ς η δια πολ
λων ε[δεσματος
παχ]εις η γλιεχρους
εργαζ[ομενων
χυμους [ουτω
10 δ ει και σα]ρκα τι
να δι ελκ[ωσι
επιτραφ]εισαν
ηγουμεθ[α τον τρα
χηλον τ[ης κυστε
15 ως εμφ]ραττειν
εκ τε τω]υ προγηγ
ς]α[μενων του ελ
[κους σημειων εκ τε]

viii 12.9 K.

Col. iv (fr. 1 ↓)

του κενωθ]ηναι ε[
πι τω καθ]ετηρι [
συλλογιο]υμεθα
και ποτε] και γενο
5 μενον ο]ιδα τοιου
τον παθη]μα^υ διεκ
βαλλομε]νου γουν [
του καθε]τηρος ηλ[
γησεν τ]ε κατ ε
10 κεινο το]υ πορου
το μερος ε]νθα [και
προτερο]ν ετ[εκμη
ραμεθα] . . [

viii 12.13 K.

Col. i

2-3 ποδη]γησις [; l. ποδηγήσει. A substantive ποδήγησις, not registered by LSJ or its Revised Supplement, is recorded by LBG from Gal. *Comp. Med. Loc.* 8.8 (xiii 217.8 K.), but the verb ποδηγήσει is needed here, as in Gärtner's text. (Variants: ποδηγήσει AQCHP, -ση M, -σαι G, -εται H^{sc}.)

4-5 του λι]θου: the article is not printed by Kühn and is omitted from Gärtner's text due to a typographical error.

Col. ii

2 προγεγονο]των [; Gärtner adopts the variant προγεγενημένων, noting that προγεγονότων is the reading of η, while L has πρώην γεγονότων, and κ προγενομένων. 'The papyrus has the truth. Galen's προγεγονότων will have been corrupted to προγεγενημένων through the influence of προγεγενημένον in the next sentence (line 6 in this copy). Corruption in the opposite direction would be more difficult to explain' (WBH).

9 π]οιον: l. πύον. For the spelling, cf. 5241 fr. 3.16; Gignac, *Grammar* i 197-9.

15 στο]χαομεθα is to be restored in Gärtner's text, which has a typographical error here.

17 επι]χξεθ[η]να: επι]χξεθ[θαι (Cκ) and επι]χξεθ[θαι (η) are not ruled out.

One line will be missing at the foot of the column: cf. col. iii.

Col. iii

5 η, deleted by Gärtner, is included in the supplement as it is present in the other manuscripts (εἰ H).

Col. iv

1 κενωθ]ηται: the other manuscripts have κενωθήναι τὸ οὔρον, printed by Gärtner. WBH argues that the papyrus has the authentic text: 'it is the bladder that is emptied; cf. e.g. Ruf. *Ren. Ves.* 8.7 (CMG III.1 144.17-18) οὐδὲ γὰρ εἰ πλείστον ὑπέλθοι οὔρον, δύναται πᾶσα κενωθῆναι (ἢ) κύστις, Gal. *Loc. Aff.* 5.8 (viii 373.3-5 K.) ἐγχωρεῖ δὲ ποτε καὶ πληρωθεῖσαν αὐτήν, ὡσπερ ἢ οὐροδόχος κύστις οὔρων, μὴ δύνασθαι κενωθῆναι. τὸ οὔρον was perhaps added above the line by a reader attempting to clarify the sense, and then copied as part of the text; cf. e.g. W. Wyse (ed.), *The Speeches of Isaeus* (1904) xl.'

5-6 τοιου]των: the other manuscripts have τοιοῦτόν τι (τοι V), printed by Gärtner, but there is not space for τι in the papyrus. 'TI may have dropped out by haplography before IT' (WBH).

6-7 διεκ]βαλλομε]νου. So FZOPL^z; διαβαλλομένου V. The true reading διεμβαλλομένου (adopted by Gärtner) is found in Q, perhaps due to conjecture (Gärtner 57); Gärtner 63 argues that the archetype ω had διεκβαλλομένου. In F, what appears to be a second hand has written ἦτοι ἐμβαλ() εἰς κύστιν above the line.

8-9 ηλ]γησεν τε. So LQ (ἦλγησέ τε); ἦργεσέ τε η. Gärtner prints ἦλγησεν with the other copies. 'τε may be right, although δέ follows (viii 12.18 K.: τε η); for τε ... δέ, cf. Denniston, *Greek Particles*² 513-14' (WBH).

12-13 εκ]μη]ραμεθα. The division is not certain. κμη may have been carried over to line 13, although that would leave line 12 on the short side.

13] . [; traces of one or two letters at letter-top level.

Fr. 3

→

Top?

]ov
] . τ .

↓

Top?

ω[

Unplaced; perhaps the upper external corner of a leaf.

D. LEITH

5228. GALEN, DE SANITATE TUENDA 5.3, 7, 9 (EXCERPTS)

46 5B.49/C(1-2)a

20.5 × 15 cm

Sixth century

The upper part of a codex leaf. The upper margin is 3.2 cm deep (perhaps the original figure). The edge of the outer margin is preserved in part, and the inner margin survives to a width of c. 1.7 cm (↓) or 1.1 cm (→). The width of the column is c. 18 cm. The original height of the written area may have been about 24-6 cm: cf. e.g. the dimensions given for P. Ant. III 182 (MP³ 136.4), assigned by Cavallo to the sixth century, and MP³ 139, of the fifth/sixth century, in Turner, *Typology* 102. A page may then have held 28-30 lines.

The hand is an example of the Alexandrian majuscule, comparable to those of XV 1820 (GBEPP 22b), assigned to the sixth century, and P. Grenf. II 112 (GBEPP 37) of 577 (cf. esp. χ, ω). κ is relatively narrow; the crossbar of π is greatly extended to either side; ρ has a large loop.

Middle stop is used at → 2 and 4. Apostrophe marks elision at ↓ 1 and → 4; it may have been present also at ↓ 8 and → 1. A supralinear bar may represent ν at line end (→ 1).

The preserved text includes parts of chapters 3 and 7 (↓), and of chapter 9 (→). Galen's wording is followed closely, except in two cases where a word or phrase has been omitted (→ 5, 9). There is one example of rearrangement: at ↓ 4-9, following the instructions concerning the kinds of exercise appropriate to old men with which the preserved text begins, a short passage from earlier in the chapter is inserted, giving a physiological explanation of why old men need some, but not too vigorous, exercise. Otherwise the focus remains on practical recommendations. There follows the beginning of the discussion of the types of bread to be eaten by old men (chapter 7), and then, when the text resumes, a passage from chapter 9 with recommendations for dealing with constipation. The material on wines and meats in chapters 5 and 6 was no doubt deliberately omitted altogether rather than moved elsewhere. Chapter 4 is largely theoretical. It emphasizes the difficulties in prescribing a general prophylactic regimen for the elderly, addresses some preliminary issues related to terminology and definitions, and describes in detail the daily regimen of an elderly doctor, Antiochus, and that of a γραμματικός, Telephus. Such subject matter may well have been excluded as of less practical utility.

It is possible that the text represents some form of summary of *De sanitae tuenda*, though Prof. Ivan Garofalo has kindly confirmed that it does not correspond to either the *Alexandrian Summary* or John the Grammarian's synopsis of the treatise.

WBH suggests that the papyrus contained not a continuous paraphrase of the whole book, but a series of extracts comparable to those in Aëtius, who draws on the same section of Galen's work at 4.30 (CMG VIII.1 372.1-375.2), on *δίαίτα γερόντων*; cf. also the shorter treatments of the same subject in Orib. *Syn.* 5.18, *Eup.* 1.11 (CMG VI.3 161, 327.6-328.32), and Paul. Aeg. 1.23 (CMG IX.1 19.20-20.16). 'There are two noteworthy coincidences. First, both Aëtius and the papyrus include Galen's statement that old men differ greatly from each other in respect of strength (5228 ↓ 4; CMG VIII.1 372.15-16) but omit the rest of the sentence, in which Galen explains the difference. Secondly, the papyrus shares with Aëtius an omission unknown to the direct tradition (→ 5), and for which there is no obvious mechanical explanation. There is a further unique agreement in the dative *ῥα* at → 4. Admittedly, there are also obvious differences in both selection and treatment, but the resemblances remain striking. As ever, it is not clear how the agreements are to be accounted for, but a common source is one possibility. Cf. in general e.g. M. Capone Ciollaro, I. G. Galli Calderini, 'Problemi relativi alle fonti di Aezio Amideno nei libri IX-XVI: Galeno e Oribasio', in

↓ (142.7-10, 141.21-4, 147.27-9 Koch = vi 321.10-13 + 329.8-9, 320.7-11, 342.1-3 Kühn)

χερουσιν εωθεν γιγνομεν[ο]ν η μετ' ελαι[ου] τριψ[ις] 142.7
 ε]φεξης δε περιπατοι τε και αιωρησεις ακοπ[οι]
 ετ]οχαζομενω της του γεροντος δυναμειω
 ου γ]αρ μικρα τις εστιν εν αυτοις διαφορα | ριπιζε 141.21
 5 εθαι μεν γαρ αυτων δειται το θερμον εξελεχχεται
 δε κατα τας σφοδρο[τ]ερας κ[ι]νησεις αι μεν ουν
 μεγαλαι φλογες [.] [.]
 ζοντος αλλ εαυτα[ι]ς εις[ι]ν [ικαναι προς το διασω
 10 ζεσθαι τε κα[ι] κρ[ατει]ν τ[ης] υλης | προδηλον δ οτι 147.27
 και των αρτων [τους μητ ενδεως εχοντας αλων
 η ζυμης η φυρ[α .] . . . [.]
 μητε] την ε[π]αι[νου]μενην
] . . [.]

A. Garzya (ed.), *Tradizione e ecdotica dei testi medici tardoantichi e bizantini* (1992) 51-72.'

The text has been collated with the edition of K. Koch in CMG V.4.2 (1923), which should be consulted for full information about variants in the direct tradition. The principal manuscripts are M (Marc. gr. 276), probably the only representative of Koch's *a* class (cf. V. Nutton, *John Caius and the Manuscripts of Galen* (1987) 93 n. 25), and dated to the twelfth/thirteenth century by N. G. Wilson, in G. Cavallo (ed.), *Le strade del testo* (1987) 57, and the *b* class, V (Marc. gr. 282) and R (Vat. reg. gr. 173), both of the fifteenth century. N is the Latin translation by Niccolò da Reggio. There are no variants of particular interest for the establishment of the text of Galen. The papyrus agrees with VR against M (followed by Koch) in the order of the words at ↓ 4. At → 2 it agrees with VR, N, and Aët. in omitting a *τι* present in M and printed by Koch, and it shares a shorter text with VR against M (followed by Koch) also at → 7 (article omitted), and against M and Aët. (followed by Koch) at → 4 (*εκ*-omitted). For the tendency of the *b* group to omit words preserved by M, cf. pp. vii-viii of Koch's edition. The papyrus shows that some of the omissions were present at least in the indirect tradition already in the sixth century. There are also omissions of a word or group of words at → 5 (shared with Aëtius) and 9, of a type expected in a work of this kind.

A broken bar, †, is used in the transcription to mark the boundary between two extracts.

→ (154.2-10 Koch = vi 356.1-11 Kühn)

αλλ ικανως γε δαιψιλες ουδεν ουδεποτε χρη τω 154.2
 ε]ιρημενων λαμβανειν φαρμακων εν με[ν γα]ρ
 τω] παραχρημα χαιρουσιν ενιοι σφοδρωσ κ[ε]νω
 θεντες οσω δ' αν μαλλον κενωθωσιν τοσο[υτ] . .
 5 μαλλον η γαστηρ ισχεται κατα τας εφεξης ημερας
 δια του]το δ εγω και traces την κοιλι
 traces μαλιστα κατα χειμω
 traces μακραν αρρω
] . . [κλυζ]ω δριμες[ι
 10 κλυμασιν αλλ ελαιον ενιημι μου]ον οπερ ου[δεν
 κωλυει και τοις υγαιουσιν γερου]σιν εχ[ε]ω ε[νιοτε
 της γαστρος επισχεθεισης και γαρ] διαβρεχ[εται

↓

1-4 (διαφορα) is transmitted also in Aët. 4.30 (CMG VIII.1 372.13-16). His version of the content of line 1 diverges significantly from the text of Galen, but for the rest his text is close to that of the direct tradition.

1 γυγνωμεν[ο]ν. Koch prints γινόμενον.

] τριψ[ι]c is expected but not easy to reconcile with the traces. Perhaps something else was written.

2 δε is omitted in part of the tradition of Aëtius and in Olivieri's CMG edition (372.14).

3-4 δυναμειως | [ου γ]αρ. The papyrus, together with M, N, and Aëtius (372.15), preserves the correct sequence, which has been disrupted in VR (followed in Kühn's edition) by the insertion of a passage from later in the book (155.4-158.17 Koch = vi 321.13-329.8 Kühn) between δυναμειως and οὐ γάρ (due to a misplaced bifolium?); cf. p. viii of Koch's edition.

4 εστιν εν αυταις: so VR. M has εν αυτοις εστιν, printed by Koch. Aëtius (372.15) gives εστι και εν τοις γερουσι.

7 The traces at the end are illegible, but the transmitted οὐδὲν εἶτι χρηζουσι τοῦ ῥιπί- fits the space.

11 η φυρ[α] . . . [. η φυράσεως η ὀπτήσεως ἐθειεν χρη] is transmitted, but this does not seem to fit the traces well. WBH tentatively suggests a corruption, η φυρ[ιμα]τος η [οπτησεως εθειεν χρη].

→

1-12 This stretch of text is also transmitted, partly in abbreviated form, in Aët. 4.30 (374.24-9).

1 αλλ ικανως γε: Aët. has ικανως δε (following an omission).

2 λαμβανειν φαρμακων. So VN; R has only φαρμάκων, and Aët. φαρμάκων λαμβάνειν. M has τι λαμβάνειν φαρμάκων, accepted by Koch.

με[ν]: omitted by Aët.

4 ορω . . . τοσο[υτ] . . . : the final traces are indistinct. The direct tradition offers ὅσον . . . τοσοῦτον (M, accepted by Koch) and ὅσα . . . τοσοῦτω (VR). In Aët., Olivieri prints ὅσων . . . τοσοῦτον; for τοσοῦτον, the variants τοσοῦτο (APⁿ) and τοσοῦτω (Pⁿψ) are recorded.

κενωθωσι: so VR (κενωθῶσι). M and Aët. have ἐκκενωθῶσι, printed by Koch. WBH notes that ἐκκενωθῶσι was more likely to be corrupted to κενωθῶσι (through the influence of the preceding κενωθέντες) than vice versa.

5 μαλλον: so Aët. The direct tradition has μάλλον αυτοις, printed by Koch.

εφεξης: ἐξῆς Aët.

6-12 Much abbreviated in Aët. (374.27-9).

7-8 κατα χειμω[να]: so VR. κατὰ τὸν χειμῶνα M, accepted by Koch.

9 The text of Galen, -ετιαν εν ταις αναληψειν ὁμοίως ἐνοχλουμένους οὐ κλύζω, is much too long for the space. A supplement of suitable length could be produced by omitting ὁμοίως ἐνοχλουμένους, which may have been considered inessential' (WBH).

11 γεραυ]ειν: so M, followed by Koch. VR omit the word, but it was present in the papyrus to judge by the space available.

D. LEITH

5229. GALEN, IN HIPPOCRATIS EPIDEMIIARUM LIBRUM III 2.8-9

64 6B.46/E(1-2)c

Fr. 1 3.5 × 2.9 cm

Sixth century

Plates V (fr. 4), VI (fr. 1-3)

Four fragments of a papyrus codex leaf. → precedes ↓. No margins survive. There are on average 44-5 letters per line. There will have been c. 55 lines on each page, occupying an area c.

27 cm high, and the column width will have been c. 12.5 cm.

The text is copied in a small, neat hand close to the Alexandrian majuscule of XV 1820 (GBEPP 22b), assigned to the sixth century on the strength of its similarity to P. Grenf. II 112 (GBEPP 37) of 577. There is a marked contrast between narrow and broad letters. The loop of α may be narrow, with straight sides joined at a curved or pointed tip, or triangular with an almost flat base. The flat base of ζ has a short curved tail extending just below the line. κ may be small, or big with a broad gap between upright and branches. There is similar variation in π, which may be broad or narrow; its crossbar does not project on either side. ξ has a long tail. There is some contrast between thick and thin strokes, for example between the thick descending and thin ascending obliques of δ and κ. There is little decoration. The large κ has an upward- or downward-pointing hook on its upper branch. The feet of uprights sometimes have rightward-pointing hooks, and the upright of the large κ has a leftward-pointing thickening at its top.

Elision is consistently marked by apostrophe where it is possible to check (→ fr. 1.4, 2.2, 3.4, 4.7; ↓ fr. 4.3). There is a rough breathing (Turner's form 1, GMAW² p. 11) at ↓ fr. 4.6. High stop is regularly employed (→ fr. 4.2, 5, 7; ↓ fr. 4.3). Iota adscript is written in -ωι where necessary (→ fr. 3.2, 4.6; ↓ fr. 4.8; added above the line at ↓ fr. 1.4). An omitted letter may have been inserted above the line at → fr. 4.2. A series of short obliques is written above the same line: cf. n. ει is written once for short ι (↓ fr. 4.6) and ουθ' for οὐδ' before a rough breathing (→ fr. 1.4), as in the other manuscripts.

The section headings were present in this copy: one is preserved in part at ↓ fr. 2.3. It is unclear how these were distinguished from the main text, if at all. There is no reason to doubt the authenticity of the headings: cf. e.g. V. Boudon-Millot, in the Budé *Ord. Lib. Prop.* (2007) 180-81, 136 n. 4. Headings of this sort introduced by περί are common enough in papyri contemporary with Galen (cf. e.g. XXXIX 2891 ii a; XLII 3007 i 25-7; LIII 3708 fr. 2 ↓ 7).

The text has been collated with the edition of E. Wenkebach, *Galenus In Hippocratis Epidemiarum librum III* (CMG V.10.2.1 (1936)). The witnesses are L, M, Q, and V. O is the lost archetype of M, Q, and V. H is the Arabic translation by Hunayn ibn Ishāq. Chapter 9 (91.10-95.2) is omitted by O.

The papyrus is of some textual interest. It has a good new reading at → fr. 3.4, and appears to have had another in a lacuna at → fr. 4.6-7. Its word order differs from that of the other manuscripts at → fr. 4.7, perhaps rightly. A difference in the spelling of a comparative at ↓ fr. 1.5 is of less interest. As for new corruptions, the particle γε has dropped out at → fr. 4.3, and there is another uncorrected error at → fr. 4.8. There is a possible agreement with H against L in the truth at ↓ fr. 4.9. A conjectural supplement of Schöne's at ↓ fr. 3.2 is not confirmed, but a less ambitious one of Wenkebach's at → fr. 2.2 may have stood in the papyrus to judge by the spacing.

The line divisions printed are arbitrary throughout.

→

Fr. 1 (88.25-89.3 W. = xviiA 621.11-18 K.)

γνώμη]ν ουχ ἀπ[λως ταραχάδεα μικρον
 γαρ το τοιουτον αλλα πα[ρ[ε]κρουσεν [φησιν φαινεται
 δη και κατ αυτο τουτο το σ]υμπτωμα χειρω[ν η τριτη της
 δευτερας γεγονεναι ου μη]ν ουθ' οτι προσεθη[κεν εν αυτη
 5 υπολαπαρον υποχονδριου σ]υντασιν ουκ [ουσαν εμπροσθεν
 υπονοησειεν αν τις εκ τουτου την] ημεραν α[υτω γεγονεναι
 μετριωτεραν ο τι γαρ αν εμπροσθεν α]παθ[εσ

Fr. 2 (89.10-13 W. = xviiA 622.8-11 K.)

τ]ουτον ι[ατρικου θεωρηματος ως
 η τεταρτη της εβδομης επιδηλος] υπ' αυτο[ν του ιπποκρατους
 ειρηται διοτι των εν αυτη γεν]ομενων [
]....[

Fr. 3 (89.21-3 W. = xviiA 623.2-4 K.)

]....[
 αυτ]ωι κατα την [πεμπτην αν ετεθνηκει φαινεται
 δη μοι φιλοτιμουμεν]ος προς τον ζην[ωνα μαλλον η ακριβως
 εξεταζων το πραγμα τα]υθ' οπε . . . [

Fr. 4 (90.12-17 W. = xviiA 623.16-624.5 K.)

]....[
 εν]ου ποτων' εφην γαρ ου[τως μεταγραφειν τινας
 ουδεν εχω]σ αφες ειπε[ιν επι του με[ιρακιου τουτου διοτι
 μητε την πο]ιο[τη]τα μητε την ποσο[τητα των γιγνομενων
 5 ποτων γι]γ[νωσκ]ω· καιτοι πολλ[η]ς ουσης εν αυτοις διαφορα
 και γαρ ε]ν τωι χρονωι διαφερουσιν [οι ποτοι τινες
 μεν εν ημερα]ις δυ[σι] και τρι[σι]ν· ενιοι δ' [εν πολλαπλασιωις
 τουτων γιγνομενοι και το γι]γνομενον [

↓

Fr. 1 (90.26-9 W. = xviiA 624.15-18 K.)

]....[
]....[
 εχει]ν αποφηνασθαι βε[βαιον ουδεν υπερ της εξ ουου
 βλαβης γενο]μενης τω'μειρα[κιωι το γε μην ως το πολυ κοι
 5 νον απαντων οιν]ων αμετρωτε[ρας ποσεως εστιν οτι και
 των νευρων απο]νται κ[αι
]...[

Fr. 2 (91.8-12 W. = xviiA 625.11-12 K. +)

πονου]ς εφ[?] ο[ι]ς ευλογον εστι και παραφροσυνην
 τινα γενεσθαι κα]ι τον πυρ[ετον οξυν περι του προγεγραμμενου
 των σημειων χαρα]κτηρος [ον το πιθανον σημαινειν φασιν επει
 δη τα πλειστα των κα]τα το β[ιβλιον

Fr. 3 (91.20-92.1 W., om. K.)

ο]ν [ευ]θ[ε]ως ε[πι του πρωτου χαρα
 κτηρος ον το πιθανον εφασ]αν δηλο[υν] ουδα[μοθι
]....[

Fr. 4 (92.10-18 W., om. K.)

ζηνω]να τρι]ιτται τοις προς
 αυτον πολεμουσιν απαντησεις ε]χροντο[] δυο μ[εν εριστι
 κωτεραι μαλλον η αλη]θεστεραι· τριτη δ' αξι[ολογος πανυ
 και κηλουσα τους ακουοντα]ς οσοι γε περι λεξ[ι]ν ελληνη[ικην
 5 εχουσι η μεν ουν πρωτη τ]ων εριστικων αν[τιλο]γιω[ν εστιν
 ηδε πιθανωτερον ει]πεν ο ιπποκρατης ου πειθαν[ον ενταυ
 θα οι δε αξιουσι το πι]θανον εκ] του χαρακτηρος [ε]η[μαινε
 σθαι προς ο παλιν οι βοη]θουντες τ[ω]ι [ζ]ηνων[ι] φασιν εαν μεν
 αυτο το πρωτοτυπον ονο]μα παρα πα[λαιωι

→
Fr. 1

2 Wenkebach's <τδ> before πα]ρ[ε]κρουσεν has been omitted from the supplement.
πα]ρ[ε]κρουσεν: παρακρούσαι O.

4 ουθ' οτι with the other manuscripts, i. οὐδ' ὅτι (Wenkebach's correction). For οὐθ' representing οὐδέ before a rough breathing, cf. Gignac, *Grammar* i 97.

5 Wenkebach's <τδ> before υπολαπαρον has been omitted from the supplement. ('Better <τῆν>: cf. A. Wifstrand, *Eikota* vii (1958) 42' (WBH).)

ς]υντασιν with L: ἔντασιν O, printed by Wenkebach, with the lemma (84.3-4 W. = xviiA 614.10 K.). The first trace is an upright on the edge with blank space to the right before ν, not suiting ε.

6 τῆν] ἡμέραν with L: τὴν δευτέραν ἡμέραν O, accepted by Wenkebach. Wifstrand (5 n.) 41-2 observed that the reference of τὴν ἡμέραν is to the third day, not the second: "δευτέραν ist gedankenlose Interpolation der Vorlage der O-Gruppe" (42). The papyrus provides welcome confirmation of L's reading: there is no room for δευτέραν' (WBH).

Fr. 2

2 του (restored) is a conjectural insertion of Wenkebach's. To judge by the length of the line, it is perhaps likelier than not to have been present in the papyrus.

4 Tops of letters, scarcely identifiable.

Fr. 3

4 τα]υθ' οπε . . . [. The other manuscripts read ταῦθ' ὁ Ταραντῖνος here. The reading τα]υθ' seems to be confirmed by the apostrophe. Following that is the top part of a round letter, ο or θ, and the π is clear after that. Then follows what most closely resembles the upper part of ε (ε is palaeographically possible). The traces become too badly damaged from that point. Perhaps the scribe failed to recognize the ethnic, and wrote something like ὄπερ? ('The papyrus restores the correct reading, το]υθ' οπερ φ[ησιν: of ρ, the top of the upright and the top and edge of the loop are visible, and of φ, the top of the upright, projecting above the letter-top level. In the other copies ὄπερ φησίν has been displaced by a supralinear gloss beginning with the same letter, ὁ Ταραντῖνος, and τοῦθ' adjusted to ταῦθ', but Galen had no reason to name the subject here; cf. ↓ fr. 3.2 n.' (WBH).)

Fr. 4

2 εν]ου` : the other manuscripts have ἐνίους, printed by Wenkebach. The supralinear trace may represent the omitted ε.

There are four tiny diagonal strokes (///) above εφ in a lighter, browner ink. Their function is uncertain. ('Perhaps a reference mark attached to the cross-reference in the text' (WBH).)

3 επ: ἐπί γε LO, printed by Wenkebach.

4 γινομενων (restored) with L (cf. γι]γνομενον below at 8): γινομένων O. Wenkebach corrects to γενομένων.

6-7 'διαφερουσιν [οι ποτοι τις μεν εν ημερα]ις is too short for the gap. The papyrus had, and Galen wrote, διαφερουσιν [αλληλων οι ποτοι. αλληλων is expected: cf. e.g. in this work 1.4 (16.19-20, 18.7-8, 18.24 W. = xviiA 506.7-8, 508.13, 509.12 K.) τέτταρας χυμους αλληλων τὴν κρᾶσιν διαφέροντας, διενήνοχεν αλληλων τὰ πάθη ταῦτα, αλληλων διαφέροντα, 3.1 (110.17 W. = xviiA 649.13 K.) διαφέρουσι δ' αλληλων αἱ καταστάσεις, 3.57 (143.9-10 W. = xviiA 707.9-10 K.) διαφέρουσιν αλληλων οἱ ἄνθρωποι' (WBH).

7 εν ημερα]ις δυ[ει] και τρι[ει]ν. ημερα]ις, read and supplied here by WBH, follows τρισίν in the other manuscripts. O, supported by H, has ἐν δυει, while L has only δύο. Wenkebach, following O, prints ἐν δυει και τρισιν ἡμέραις.

8 γι]γνομενον read and supplied by WBH, who notes that the corruption of the πινομενον given by the

other sources and printed by Wenkebach will be due to the influence of γιγνόμενοι shortly before; it too was no doubt spelt with γιγν-, as in L and in Wenkebach's text (cf. 5 γι]γ[νωσκ]ω), rather than with γω-, as in O.

↓

Fr. 1

1-2 The identification is uncertain. WBH tentatively suggests for line 2 ως]περ ουδ['] ο αυστ[ηρος (90.25 W. = xviiA 624.14-15 K.).

5 αμετρωτε]ρα: the other manuscripts have ἀμετροτέρας, printed by Wenkebach.

Fr. 2

2 κα]ι τον πυρ[ετον οξυν: so L, followed by Wenkebach. O has only και (omitted by Q) πυρετόν.

Fr. 3

2 εφας]αν δηλο]υν]. The identification of the traces at the start is uncertain, but it is in any case clear from the space available that the papyrus did not include οἱ περὶ τὸν Ζήνονα (Schöne's supplement, placed in the text by Wenkebach) before δηλο]υν].

3] . . . [. WBH tentatively suggests βιβλιω]ν ερη]θαι (92.1 W.).

Fr. 4

6 πιθανωτερον restored with Wenkebach: πιθανώτερα L.

πειθαν]ον: i. πιθανόν. It is not clear whether or not the spelling was corrected.

6-7 ενταυθα οι restored with L: Wenkebach emends to ἐνταυθοῖ.

9 παρα πα]λαιωι. L has παρ' ἀπολλωνίωι; παρὰ παλαιῶ, printed by Wenkebach, is Schöne's correction (cf. H, 'das Stammwort, das einer von den Alten erwähnt hat'). The final trace could suit ο as well as α, but no apostrophe was written, and one might have expected one if the papyrus had L's reading.

D. LEITH

II. NEW MEDICAL TEXTS

5230. HERAS, *NARTHEX* (?)

68 6B.25/H(1-2)d

Fr. 1 2.2 × 6.7 cm

Early second century
Plate VI

Three fragments with text running along the fibres. Frr. 1 and 2 are blank on the back, but there are exiguous damaged remains of four lines in a tiny hand on the back of fr. 3, running in the same direction as the text on the front. No margins survive. A line held about 18–23 letters, and the column width was about 7 cm.

The text is written in an informal round hand. It is generally bilinear, but ρ and ϕ or ψ (fr. 2.3) descend below the line. Letters are very often joined. α has a rounded loop; ϵ has a high crossbar that may touch the upper arc and extend beyond the bowl to touch the next letter; η has a high crossbar and may be looped at the upper right-hand corner; ν is V-shaped and looped at the base; ω is particularly broad, in one movement, looped in the middle. There is a close resemblance to P. Lond. Lit. 132 (*GLH* 13b), assigned to the early second century. An objectively dated document in a similar hand is PSI IX 1062, of 104–5.

There are no lection signs and no punctuation where it might be expected (fr. 1.8, 16). Iota adscript is not used at fr. 1.15.

Fr. 1 overlaps with Gal. *Comp. Med. Gen.* 5.2 (xiii 765.15–766.6 K.), part of a recipe for a plaster quoted from Heras of Cappadocia's pharmacological collection, often referred to as the *Narthex*, on which cf. C. Fabricius, *Galens Exzerpte aus älteren Pharmakologen* (1972) 183–5; K.-D. Fischer, *Galenos* 4 (2010) 173–80. Frr. 2 and 3, however, do not seem to contain a known text. The simplest hypothesis is that the papyrus is a copy of Heras' manual, though it may be a copy of another compilation which, like Galen's, incorporated material extracted from it. A later example of such excerption from Heras is provided by P. Berl. Möller 13 (MP³ 2382), assigned to the late third or early fourth century. This papyrus preserves a recipe to combat hair loss from Heras' *Narthex* which, except for a few minor textual variants, agrees with Galen's extensive quotation at *Comp. Med. Loc.* 1.2 (xii 430.8–15 K.). In this case, the Heras recipe seems certainly to have been excerpted, whether directly or indirectly, since Galen also quotes the text that follows immediately in the *Narthex*, but this is not present on the papyrus: see M.-H. Marganne in *Pap. Flor.* VII (1980) 179–83. A little later again, two plasters of Heras are preserved in P. Mich. XVII 758 (MP³ 2407.01), of the fourth century (at A 6–13, E 5–8; cf. also B 2–4). P. Berol. inv. 16111, to be published by Anna Monte, represents a case similar to that of the present papyrus, in that it preserves two consecutive recipes quoted by Galen from Heras' *Narthex*, but these are preceded by additional recipes not found in Galen's compilation.

Fabricius, *op. cit.* 242–6, argues that the composition of Heras' drug book is to be placed between 20 BC and AD 20, as it included a recipe for theriac used by Aelius Gallus during his campaign in Arabia in 25/24 BC (Gal. *Ant.* 2.17 (xiv 203.5–6 K.)) and was cited by Celsus

(5.22.3, 5.28.4E, 6.9.5 (CML I 208.30, 239.15, 283.24)), probably during the reign of Tiberius (V. Nutton, *Ancient Medicine* (2 2013) 376 n. 63).

The plaster quoted by Galen is according to him a famous one: it is 'known to all', and a reputable example of *πολύχρηστα*, drugs which are useful for a variety of different ailments (*Comp. Med. Gen.* 5.1 (xiii 764.12–18 K.)). He cites it to illustrate the propriety of mixing together in compound drugs ingredients with opposing properties: according to others, this served only to cancel those properties out (e.g. Gal. *Comp. Med. Gen.* 1.1 (xiii 364.11–365.13 K.)). The plaster is said to be effective against a variety of different types of wound and in promoting cicatrization.

As for the material in the papyrus that is not known from Galen, fr. 3 offers nothing comprehensible, while fr. 2 preserves part of an anodyne drug, perhaps some sort of lozenge or drink, to soothe colic (among other things). It seems to be unconnected to the wound plaster of fr. 1.

For the manuscript tradition of Galen, *Comp. Med. Gen.*, see D. Manetti in CPF I 2*, pp. 14–15, and in V. Boudon-Millot et al. (edd.), *Storia della tradizione e edizione dei medici greci* (2010) 129–42. I am extremely grateful to Alessia Guardasole for sharing with me her collations of M (Laur. plut. 74.25) and O (Haun. GkS 225,2^o), and to Daniela Manetti for her collations of C (Vat. reg. gr. 172). The papyrus offers new readings at fr. 1.14–15, where it seems to have had a superior text. Another new variant, at fr. 1.8, seems to be corrupt.

The line division in fr. 1 is suggested *exempli gratia*.

Fr. 1

]. . . []. . . [
	] . που [	] ἀπού[λων. ποιεί
	] . καιεπι [	μέντο]ι και ἐπι [τῶν χειρωνεί-
	] κωνκα [	ων ἐλ]κῶν κα[ι τῶν ἄλλων
5	] αραπλη . [	τῶν π]αραπληξί[ων ἄκρωσ-
	] εγαρτυλου [	τούς τ]ε γὰρ τύλου[ε τήκει και
	] αυταγνη . [	μετὰ τ]αῦτα γνηξ[ίαν cάρκα γεν-
	] . καλην . [	νῆ λία]ν καλήν. κ[ηροῦ λί(τρας) β, φρυ-
	] . . . . υξυ . [	κτης] λί(τρας) . , ἰοῦ ξυς[τοῦ οὐγ(κίας) σ, μάν-
10	] . . . [ . ] . ουκ . [	νης οὐγ(κίας)] γ, ἐλ[α]ίου κο[τ(ύλας) ε, ὄξους ξ(έστην)
	] . . . [ . ] . ατα [	α. τὰ τ]ηκτ[ά] κατὰ [τῶν ξηρῶν.
	] . [ . ] . [ . ] ω . [	χρ(ῶ) τῆ] ἐμ]πλ[ά]ς[τρ]ω π[ρὸς τραύ-
	] . α[.] ειμε . [	ματα, κ]αὶ ἀ[ν]ειμέν[η δὲ cὺν ρο-
	] . ποιω . [	δίνω π]υροποιῶ . [c. 9 ,
15	] ωτηδε . [	τῆ] κηρ]ωτῆ] δὲ ἐκ[λυθείσῃ εἰς
	] . σιντι [	ἀπούλ]ωσιν. τι[νέσ
] . [] . [

1] . . [, letter feet, the second apparently an ascending oblique 2] . . [, low horizontal, e.g. *a*, not *ε*
 3] . . [, lower part of vertical 5] . . [, lower arc of a circle; low trace 7] . . [, left-hand arc of a circle (*o*, *c*)
 8] . . [, high trace of upright 9] . . [, vertical joined from right at mid-height, *κ* rather than *η* 9] [, two
 high specks, one above the other; gently rising horizontal touching vertical above mid-height, followed by
 lower left-hand arc of a circle 10] . . [, left-hand arc of a circle (*o*, *c*) 10] . . [, high speck, lower left-hand
 arc of a circle, trace on line 11] . . [, *o*, upright 11] . . [, high speck 11] . . [, perhaps cross-bar and second
 upright of *η*; perhaps ends of the branches of *κ*; low trace 12] . . [, *α*, perhaps end of upper branch of *κ*, trace below
 12] . . [, upright joining crossbar at top (*π*, *τ*?); low trace of descending oblique 13] . . [, low arc 13] . . [, beginning
 of high crossbar (*π*, *τ*) 13] . . [, upright joined by oblique at foot, consistent with *αι* or *υ* 14] . . [, trace on
 line 14] . . [, low trace; lower arc of circle (*εθo*c) 14] . . [, low loop, e.g. *α* or *κ* (cf. 10) 15] . . [, *ε* or *θ*;
 top of upright? 16] . . [, right-hand arc of a circle 17] . . [, upper arc of a small circle, e.g. *ρ*

'... cicatrization. Furthermore, it works excellently in the case of Chironian sores and in other similar cases, for it both dissolves the scabs and after this generates genuine flesh. Very good. 2 pounds of wax, 3 (?) pounds of "roasted" resin, 6 ounces of scraped rust, 3 ounces of frankincense, 5 kotylai of olive oil, 1 xestes of vinegar. The soluble over the dry (ingredients). Use the plaster against wounds, diluted with rose oil for producing pus and (cleansing (?)), and diluted with cerate for cicatrization. Some ...'

Fr. 2

	] . . . αcδ . [ . ] . . [	] . . . τας δ . [.] . . [
	] κηανωδυν [	] κη ανωδυν [
	] ωπροσστρ . [	] ω πρὸς στρόφ[ους
	] . ειομοε . [	] . ειομοεν [
5	] . ωνα . [	5] . ωνα . [
	] . γρ . [	] . γρ . [

1] . . [, foot of vertical with small right-facing serif; short vertical with left-facing serif, topped by horizontal touching *a* at mid-height 2] . . [, foot of vertical with small left-facing serif 3] . . [, small low arc rising from left to right; foot of vertical 3] . . [, lower arc of circle (*εθo*c); lower parts of *φ* or *ψ* 4] . . [, prima facie the tail joined from below by the ascending oblique of *λ*, but *a* is not excluded: cf. 1, 5 5] . . [, top of vertical 5] . . [, low trace on a single fibre 6] . . [, foot of ascending oblique 6] . . [, apparently upper right-hand part of *α* 7] . . [, top of vertical

Fr. 3

	] αcouη [
	] . . εικ . [
	] . . υν [
	] προπ [
5	] πον [
	] ην . [
] . . [

2] . . [, high traces 3] . . [, *c* or *o* abraded on right 3] . . [, horizontal joining upright at mid-height, *η*, *τ* or perhaps *ει* possible; ends of branches of *κ* or possibly *χ* 6] . . [, upright on edge 7] . . [, horizontal at mid-height with damaged traces above, perhaps *ε*; trace touching preceding horizontal

Fr. 1

2 ἀπού[λων with CMO as consistently in this word and cognates (also e.g. at xiii 765.13, 14 K.): ἐπ- Kühn.

8 καλήν. Kühn gives λευκή, but CMO have καλή, which is clearly right. Cf. the plaster of Menoetius quoted from Heras, described as λίαν καλή immediately before the ingredients are listed, at *Comp. Med. Gen.* 2.10 (xiii 512.1-2 K.). Also e.g. *Comp. Med. Gen.* 1.19 (xiii 455.15 K. = Damocr. p. 104.2 Bussemaker) λευκήν καλήν ἔμπλαστρον, 4.14 (xiii 747.18 K.; Heras) ταύτης καλλίων ἔμπλαστρος οὐκ ἔστι, 4.14 (xiii 752.18 K.)

ἔμπλαστρος Γαληνοῦ. καλή ἢ ἡμετέρα, 7.7 (xiii 984.14 K.) ἄλλο ἔμπλαστρον μάλαγμα καλὸν Κρίσπου. The accusative given by the papyrus will be due to the influence of the context.

9] λ(τρας). The initial traces are badly abraded, and Λ is little more than a guess. For the quantity, CMO and Kühn have γ'. The gently rising horizontal visible in the papyrus looks rather low for γ, but it is not excluded: the crossbar of γ is also quite low, though not rising, at 6. ε might be an easier reading: cf. 15 δε.

10 κο[τ(ύλαι). To judge by the space, the regular abbreviation κδ was probably used. For examples in medical papyri, cf. e.g. SB XXVIII 17134 (PSI X 1180, MP³ 2421) A iii 45; C i 17; P. Tebt. II 273 (GMP II 5) v 9.

12 χρ(ω), i.e. the monogram ϙ, regularly used in pharmacological papyri, is restored here to suit the space.

13 ἀ[ν]ειμέν[η]. CMO give the nominative ἀνειμένη, Kühn ἀνειμένη. I have restored the dative in agreement with τῆ ἔμπλάστρω and as a counterpart to ἐκ[λυθείσῃ] below at 15. This appears better suited to the papyrus' new readings at 14 and 15, on which see below.

14 π]υροποιῶ. CMO and Kühn have πυροποιεῖ καὶ ἀνακαθαίρει, with the plaster as subject (cf. 13 n.). With ἀ[ν]ειμέν[η] ... π]υροποιῶ, datives in agreement with τῆ ἔμπλάστρω, we obtain excellent sense, 'and (use the plaster) diluted with rose oil as a pus-producer'. After π]υροποιῶ, we may consider restoring a second dative: κ[αὶ] καθαριτικῆ might just fit the available space at line end. The two terms are elsewhere juxtaposed in pharmacological literature of the Roman period with reference to treating wounds: cf. Dsc. 1.54.2 (i 50.15–16 W.), on saffron oil, ἔστι δὲ καὶ πυροποιὸν καὶ ἐλκῶν καθαριστικόν; ps.-Gal. Int. 15.3 (xiv 763.14–17 K. = 74.20–22 W.), on salfron oil, ἔστι δὲ καὶ πυροποιὸν καὶ ἐλκῶν καθαριστικόν; τα μὲν γὰρ διαφορητικά, τὰ δὲ συμπεπτικά, τὰ δὲ ἐναίμα, τὰ δὲ πυροποιά, τὰ δὲ ἀνακαθαριστικά, κτλ. WBH suggests as an alternative π]υροποιῶ, ἀ[ν]ακαθαριστικῆ.

15 τῆ κηρωτῆ δὲ ἐκ[λυθείσῃ]: τῆ κηρωτῆ διεκλυθείσῃ CMO and Kühn. The new text gives an alternative application for the plaster ('but diluted with cerate for cicatrization'), balancing 13–14. Heras has just said that the plaster is πληροῦσα δὲ καὶ ἀπουλοῦσα ἐκλυθείσα μετὰ κηρωτῆς καὶ ἔτι μᾶλλον περὶ τὴν ἀπούλωσιν (xiii 765.14–15 K.; for the reading ἀπ-, cf. 2 n.). If the other reading is adopted, διεκλυθείσῃ will agree with τῆ κηρωτῆ, but this is not as satisfactory: presumably the sense will be 'produces pus and cleanses with diluted cerate for cicatrization'. διεκλύω and cognates are not common in medical texts.

16 ἀπούλ]ωσιν. ἀπ- is restored with CMO; Kühn has ἐπούλωσιν. Cf. 2 n.

Fr. 2

2]κη ἀνώδυν[. The reference in the next line to abdominal pains, στρόφοι, suggests the supplement κωλικῆ ἀνώδυν[ος: cf. ἀνώδυνος κωλικῆ three times in Gal. *Comp. Med. Loc.* 9.4 (xiii 286.13, 287.2, 8–9 K.). Another possibility is ξηραντικῆ ἀνώδυν[ος, suggested by Gal. *Comp. Med. Loc.* 7.5 (xiii 91.5–6 K.) ἄλλη σφραγὶς ἀνώδυνος, ξηραντικῆ βενμάτων καὶ τρώφων καὶ βηχῶν; cf. also *Comp. Med. Loc.* 7.5 (xiii 90.17–18 K.) ἄλλη ἀνώδυνος, ὡς Ξενοκράτης, ἢ χρώμαι μάλιστα πρὸς στρόφους καὶ δυσεντερικούς.

3]ω. Perhaps χρ]ω. The monogram ϙ is very common in pharmacological papyri, and may have been used at fr. 1.12 (cf. n.), but the scribe may not have employed it consistently. Cf. SB 17134, where χρῶ is written out in full only at A ii 45, iii 22, 23, but the monogram is used much more often, as noted by I. Andorlini, in ead. (ed.), *Testi medici su papiro* (2004) 87.

4] εἰπομεν[. WBH suggests] ἄ εἰπομεν [, comparing Damocr. p. 107.45 B. ap. Gal. *Comp. Med. Gen.* 6.12 (xiii 918.7 K.) ποιεῖ δὲ πρὸς ἄ προεῖπον ἔμπροσθεν πάθη, p. 124.103 B. ap. Gal. *Ant.* 2.3 (xiv 122.2 K.) ἄλλη σφόδρα καλή πρὸς ἄ προεῖπον πάνθ' ἀπλῶς.

D. LEITH

5231. COMMENTARY ON HIPPOCRATES, EPIDEMIAE I

100/34(a)

12.5 × 29.1 cm

First/second century

Frontispiece

On the back of the Greek/Latin glossary LXXVIII 5162, and upside down in relation to it, remains of two columns written across the fibres, with upper and lower margins and intercolumnium. Both texts are written by the same hand, though a thinner pen was used for 5162. The upper margin extends to 3.3 cm, the lower to 1.8 cm, while the intercolumnium is 1.3–2 cm wide. The column height is 23.9 cm, and the column width will have been approximately 8 cm. The letters are on average 0.3 cm high, and there are 20–25 letters in each line (22 on average).

The text is written in a neat, unpretentious, informal round hand, leaning slightly to the left, and approximately bilinear. υ is v-shaped, often leaning to the left and with its second oblique curved or hooked. Cf. P. Lond. Lit. 132 (*GLH* 13b), assigned to the early second century; V 841 (*GLH* 14), of the mid-second century; hand 2 of P. Lond. Lit. 108 (*GMAW*² 60), of the late first century.

The second of the two lemmata, at ii 4–16, is marked off at its end by paragraphus and high stop, and the paragraphus at its beginning below ii 4 may also have been accompanied by a high stop in the lacuna; the first lemma, ending at i 1–8, has a high stop at its end, no doubt originally accompanied by paragraphus. The same marks are used as punctuation within the main text (paragraphus at ii 30, 38; high dot at i 24, 32, ii 29). Except at ii 29, the high dot may always have been accompanied by a paragraphus in the margin, and *vice versa*. There are no examples of *eisthesis* or *ekthesis*, and no marginal signs.

The text has been corrected above the line in one place (ii 23), apparently by the hand of the main text. Iota adscript is not written (cf. i 4, 5, 34, 39, ii 1). Diaeresis marks initial iota at ii 18, 36 (unless a compound). As in 5162, εἰ is often written for long ε (i 13, 37, ii 29, 37).

The papyrus must have been owned by a person of some intellectual ambition, one who was apparently interested in the Latin language as well as in some high-level medical scholarship. It need not be assumed that he was a practising doctor. He may have been a grammarian, for example. XXXIII 2660 (C. Gloss. Biling. I 6) represents a similar case: it is a Greek-Latin thematic glossary of the same period, with a list of comic poets and their plays in a different hand on the back (XXXIII 2659).

The preserved part of the text is concerned with the second case history from the final section of *Epid. I* (ii 684.10–688.8 L. = i 203.11–204.19 Kw.). At i 1–8, we have the end of a lemma preserving the final lines of the case history, but at ii 4–16, we have the opening section of the same case history, containing its introductory details and Silenus' symptoms for the first day. Apparently, the case history was quoted in full, followed by some general comments; then the author commented in greater detail on each part of the case, perhaps dealing with each day in turn. Each section will have been preceded by a lemma containing the relevant text. It is common in later philosophical and medical commentaries for general remarks on a section of text to precede more detailed discussion of shorter passages within that section, with the later lemmata repeating parts of the text of the initial lemma (cf. e.g. E. Lamberz, 'Proklos und die

Form des philosophischen Kommentars', in J. Pépin, H. D. Saffrey (edd.), *Proclus: Lecteur et interprète des anciens* (1987) 1–20, at 14 with n. 52). Compare perhaps the later Neoplatonic formal distinction between the *θεωρία*, concerned with the exposition of the doctrines underlying a passage, and the *λέξις*, which addressed more specific matters.

A *terminus post quem* for the composition of the commentary is given by the reference to Asclepiades of Bithynia at i 12. Asclepiades' dates are disputed, but even if he was not dead by 91 BC, as argued by E. Rawson, *CQ* 32 (1982) 358–70, his death should not be pushed more than a decade or so later than that: cf. R. Flemming, in D. Sedley (ed.), *The Philosophy of Antiochus* (2011) 55–79, at 67–9.

A general hostility to Asclepiades is evident in the text, but further clues as to the author's broader methodological commitments are furnished by the nature of his criticisms. He attacks Asclepiades' overall approach to the source text, in that he described the nature of Silenus' illness and its causes as it developed and presented different accompanying symptoms (i 9–13). The commentator, by contrast, presents himself as someone who is interested only in therapy, with the implication that a discussion of the nature and cause of the disease will be irrelevant in this respect, and who finds this concern to pin down the disease and its cause inappropriate (i 13–16). He also refers to 'self-evidence' (*ἐνάργεια*, 17) as a means of gaining an idea of the disease. Complaints about wasting time on discovering causes, which do not contribute to treatment, and about focusing on what is hidden rather than what is apparent, are characteristic of the anti-Dogmatist polemics of the Empiricist, and later Methodist, medical sects. Hippocratic exegesis, however, was a prime concern of the Hellenistic Empiricists, and the *Epidemics* were particularly prized by them. On the other hand, commentaries on Hippocratic writings by Methodists are very poorly attested: Thessalus of Tralles wrote a single book refuting *Aphorisms* in the mid-first century, while Julian in the mid-second wrote 48 books against the same work (Gal. *Adv. Jul.* xviiiA 247.12–248.7 K. = CMG V.10.3 33.19–34.9), though the polemical aim of these works may undermine their classification as true commentaries; for doubts that Soranus wrote Hippocratic commentaries, see A. E. Hanson, M. H. Green, 'Soranus of Ephesus: *Methodicorum princeps*', *ANRW* II 37.2 (1994) 968–1075, at 1018–21. The Empiricists were among Asclepiades' principal ideological rivals, and they were certainly eager to criticise him in turn. If the author of the commentary saw himself as belonging to one of the medical sects, then this was almost certainly not one of the Dogmatist sects, and more likely the Empiricist than the Methodist.

Before Galen, only a few commentators on *Epidemics* are known to us: cf. in general S. Ihm, *Clavis Commentariorum der antiken medizinischen Texte* (2002). Galen states that the Empiricist physicians Zeuxis (probably second century BC) and Heraclides of Tarentum (fl. c. 75 BC) wrote commentaries on all of Hippocrates' works: *Hipp. Off. Med.* 1 praef. (xviiiB 631.15–632.1 K.) δύο μὲν εἰς ἅπαντα βιβλία Ἱπποκράτους γράφοντες ὑπομνήματα Ζεῦξις τε καὶ Ἡρακλείδης, οὐκ εἰς πάντα δὲ Βακχεῖος καὶ Ἀσκληπιάδης (ἀλλὰ τὰ) δυσλόγητα ((ἀλλὰ τὰ) tentatively supplied by H. von Staden, in C. W. Müller et al. (edd.), *Ärzte und ihre Interpretationen* (2006) 18 n. 12). On the interpretation of 'all the books of Hippocrates', see H. von Staden, in C. Gill et al. (edd.), *Galen and the World of Knowledge* (2009) 153–5. Of the figures

named by Galen, Bacchius the Herophilean (III BC) and Zeuxis predate Asclepiades, and can thus be ruled out as authors of the present text. In his commentary on *Epid. I*, Galen refers to certain comments made by the first-century doctor Quintus (*Hipp. Epid. I* 1.1, 2.7 (xviiA 24.11, 99.13 K. = CMG V.10.1 17.3, 52.26)), but since Quintus published no written works of his own, it seems likely that these were transmitted to Galen by Satyrus, his teacher at Pergamum and a former pupil of Quintus. In any case, the date of the papyrus should rule out Quintus too.

This leaves the famous Empiricist Heraclides of Tarentum as the only known Hippocratic commentator for whom we have any indication that he wrote a commentary on *Epid. I*, though there may well have been others of whom we know nothing. On Heraclides' Hippocratic commentaries, see e.g. von Staden, loc. cit. 151, with bibliography. Galen does not specifically mention a commentary of his on *Epid. I*, but that will be due to his tendency not to name earlier commentators in his own 'private' commentary on that work (von Staden, loc. cit. 141). Asclepiades' authority as a Hippocratic commentator may not have lasted long: Galen is aware that he wrote a number of Hippocratic commentaries (see above), but mentions him very rarely in this connection, citing only his commentary on *In the Surgery* by name. Erotian's Hippocratic glossary mentions Asclepiades only once (C 21, p. 78.14–18 Nachmanson), quoting likewise from his commentary on *In the Surgery* on the meaning of *κρέταρον*. Caelius Aurelianus mentions Asclepiades' commentary on *Aphorisms* on one occasion (*Cel. Pass.* 3.1.5 (CML VI.1 294.22–5)). His prominence in 5231 (i 12, with a back-reference in *ὡς ἔφη*) may suggest then that this commentary was composed closer to his lifetime, and so perhaps in the first century BC. This could point to Heraclides of Tarentum, but in view of the poor state of our evidence for Hippocratic exegesis in this period such hypotheses remain mere speculation.

It is an obvious conjecture that the commentator is referring to a commentary by Asclepiades himself on *Epid. I*, for which there has hitherto been no direct evidence: it is difficult to imagine in what other context Asclepiades could have discussed this case history in detail. Only Asclepiades' commentaries on *In the Surgery* and *Aphorisms* are named explicitly in the sources, but we know from Galen, quoted above, that he wrote other works of Hippocratic exegesis. It may be that the separation of the *Epidemics* into three groups, viz. *Epid. I & III*, *Epid. II, IV & VI*, and *Epid. V & VII*, each judged to enjoy decreasing levels of authority, did not occur before the influential edition of the Hippocratic Corpus by Dioscurides and Artemidorus Capiton in the late first or early second century AD (see W. D. Smith, *The Hippocratic Tradition* (1979) 234–9, and in vol. vii of the Loeb Hippocrates (1994) 1–2). It is possible that Asclepiades' exegesis of *Epid. I*, composed around the later second century BC, formed part of a larger commentary on the whole of *Epid. I–VII*. Galen's immediate predecessor Sabinus, in commenting on the ethnicity of a patient described in *Epid. III*, cited an observation by Asclepiades about the effectiveness of phlebotomy in Parium (Gal. *Hipp. Epid. III* 3.76 (xviiA 739.1–2 K. = CMG V.10.2.1 161.19–162.1); see D. Manetti, A. Roselli, in *ANRW* II 37.2 (1994) 1616). But there is nothing to suggest that the Asclepiadean text that Sabinus consulted was specifically a Hippocratic commentary, or concerned at all with this passage of *Epid. III*. Asclepiades' observation was apparently well known, and was certainly made in book 2 of his treatise *On Acute Diseases* (Cael. Aur. *Cel. Pass.* 2.22.129 (CML VI.1 218.19–24); cf. also Gal. *Med. Exp.*

26.6 (p. 142 Walzer), where a lapse of memory may be responsible for the slight differences in the report). Likewise, as Manetti and Roselli point out (1616–17), the report at Gal. *Hipp. Epid. VI* 5.5 (xviiB 246.6–247.5 K. = CMG V.10.2.2 270.18–31) need not be derived from a commentary on that work.

What can we glean from our text about Asclepiades' exegetical approach in his commentary on *Epid. I*? As we have seen, our commentator notes that he dealt with the nature of the disease and the causes of its various symptoms, and not only with therapy (cf. i 9–13 n.). Asclepiades evidently tried to identify the particular disease from which Silenus had suffered. His account of the causes of the disease presumably made use of his particulate theory of matter, according to which the human body, like all matter, is made up of invisible particles named ὄγκοι which are moving incessantly through void gaps; health consists in their balanced motion, while the majority of diseases are caused by their obstruction in different parts of the body. Asclepiades' explanation was apparently presented as coherent enough to account for all of the concomitant symptoms recorded in the Hippocratic case history (cf. i 11–12 πα]ρακο-λουθησαν[τ]ων). In his own commentary on the Silenus case, Galen states that his disease was almost identical to phrenitis, except for the fact that it involved heaviness of the head (*Hipp. Epid. I* 3.19 (xviiA 264.3–8 K. = CMG V.10.1 132.22–6)). Galen also happens to have preserved some details of Asclepiades' account of the motions of the ὄγκοι in the different stages of phrenitis (*Med. Exp.* 28.3 (pp. 146–7 Walzer, from the Arabic)); cf. J. T. Vallance, *The Lost Theory of Asclepiades of Bithynia* (1990) 108–17. His report may give some idea of the possible content of Asclepiades' description of Silenus' disease:

Burning fever inflames the membranes of the brain, and it results from this that the corpuscles [i.e. the ὄγκοι] make their way to the finely divided part, or those of them which do so become extremely fast and violent in motion all at once; this is followed by an obstruction of the corpuscles in the pores, which causes the disease known as phrenitis. Thereupon what lies beneath the cartilages spreads upwards, being attracted by the finely divided part. Now, when the very numerous corpuscles rise and rub against the resisting parts, they are repelled. After this they return to the roomy parts which are capable of receiving them, and for this reason the bowels are loosened. Since this is the case, it is therefore necessary for the origin of the burning fever and its accompanying symptoms to come first, after which phrenitis follows, then comes the upward attraction of the regions of the cartilages and the phrenitis is followed by the loosening of the bowels.

This combination of mental impairment and looseness of the bowels matches extremely well the symptoms experienced by Silenus: the Hippocratic author repeatedly reports that the patient suffered from a considerable looseness of the bowels, especially on the first, second, third, eighth, ninth, and tenth days. All this took place together with his worsening mental condition, which started to deteriorate on the second day. We may take it that Asclepiades will have tried to explain in a similar manner most of the symptoms that Silenus suffered—not just his

mental problems and his loose bowels, but also his pain in the loins, heaviness of the head, and so on—attempting to give each a coherent explanation as part of a single pathological process. It is then not difficult to see how anyone who did not subscribe to Asclepiades' theory of matter could find an explanation of Silenus' disease along these lines a pointless and frustrating diversion, to be contrasted with the information available through 'self-evidence' (ἐνάργεια, i 16–19).

The commentator next portrays Asclepiades as being excessively concerned with the periodicity of the paroxysms over the course of the eleven days of Silenus' illness (i 19–21). Periodicity certainly formed a major part of Asclepiades' pathology, and observation of paroxysms directly determined when certain treatments, such as prescribing food, could be administered. Asclepiades rejected, however, the Hippocratic conception of critical days, maintaining that crises could not be predicted based on a preconceived theory (cf. i 19–24 n.). In Silenus' case history, the Hippocratic author confirms that there was a general intensification or paroxysm of the disease on the third day, and the same on the fourth, but there are no further explicit references to paroxysms in the source text. The anonymous commentator seems to object that the summary details recorded in *Epid. I* are insufficient to support the sort of detailed analysis of paroxysms which Asclepiades provided in his commentary (i 24–32).

There was also a further aspect of Asclepiades' procedure which the commentator found particularly distasteful (i 32–9). There is almost no reference to treatment in the source text, but Asclepiades seems to have imagined himself visiting Silenus as one of his own patients, and to have described how he would have treated him on each successive day of his illness. Perhaps one could imagine a pedagogical focus for this more clinical perspective, but the commentator was keen to make it appear inappropriate. The commentator notes in particular that Asclepiades claimed 'to know nothing of what resulted' (i 37–8), which must refer to Silenus' eventual death.

Asclepiades' commentary on the case histories of *Epid. I* seems therefore to have been a rich one, combining a comprehensive diagnosis of the disease, a concern to explain all the associated symptoms mentioned, an analysis of its periodicity, and a therapeutic interest absent from the original case history.

The lemmata of 5231 offer a few new readings. There are omissions due to *saut du même au même* at i 2 and ii 13 (in the restored part), and apparently another uncorrected error at i 2 (ὕποστασει for ὑπόστασις). There are minor variants, not affecting the sense, at i 1, 3–4, and 5, and an agreement with the other witnesses where editors emend at ii 9. The contracted form πονέειν is given at ii 9 where the other witnesses have πονέειν. For manuscripts and editions, see on 5222.

Col. i

Col. ii

]ποκοιλιομοι
]ουνοστασεις
]ευκηκαιπαλι
 5]νδεκατηραπε
]δετουτωκαι
]υμαραιονμε
]παμοσσνε
]ριεταεικοσι
]κευηντουπα
 10]εκαστοναιτιαν
]ε. . . .]ρακολουθησαν
]νασκληπιαδηωσφεην
]εγραβηνειμεινθεραπει
]υτομονονπροθεμενοις
 15]εινδυσκολιανεικοτωσπα
]ειτοπρα. [.] επιμενγαρ
]εναργειασενηπαντως
]μησαφητωατηνοσου
]ουλαβειναλλαουνπαρο
 20]οικαιδιαλειμμασιν
]παρηκολουθησενκαιε
]οικεκαστατωνπροσαγο
]ωνδυνησομεθαπαραμε
]εντουτοιςδετοιςπα. α
 25]ποκρατουςειρημενοι.] υ
]ραδιωστοςουτονεν. [.] υ
]ναλλωσπερεπιδρ. [.] υ
]οσβουλομενουταχαλε
]τατακαιανελοντατοναν
 30]πονηδιγησασθ. [.] καθα
]τακατατηννοσενοικ. υ
]ηθ. ναι. καιμηκαιτο
]εναμμεντασυμβαντα
]ηνωλεγεινδετηνε
 35]ε. ε. ανωσανεικαθημε
]σιονταπροσαντονποι
]νομηδενγειωσκειω
]ποβαντωνδυσωπιαν
]αιδυσχερειαντωλ. γωτι
 40]αλλομ. [.] [.] κ. [.] . ε[
]αρισως. [.] [.] [.]
]λ[] ω[

]προστωκαιτ. []
]ποναναγκ[]
]φιλιατρουςω[]
 5]ενφθησες. []
]επι. [.] υπλατ[]
]οντωνεναλ[]
]καιποτωνκα[]
]καιρωνπυρ[]
]πονεινκαιο[]
 10]βαροςκαιτρα[]
]ποδεκο[]
]ακρη[]
]λαδι[]
]ε. α. . . . []
]εασεξη[]
 15]μηθη. χρ[]
]παρρασημη[] υ
]οσονιςχυ[]
]ασαιτωναδ[]
 20]αιδοςαμε[]
]θρωπουσπ[]
]κηπαρειχ. []
]αιτιωναμ[]
]σοικκατατη. []
 25]νομενακαιτ[]
]τασενυγροισ[]
]εποιεμετεμ[]
]ηκοιλιασρσι[]
]φισμου. γεω. []
 30]δεκαιλυσεως[]
]εβαινεονυ[]
]νοσητητην[]
]διαμαρταν[]
]ναδιημαρ. []
 35]τηναναφο. []
]ιδεινδετολ[]
]τωντωσειλ[]
]θησαντωνε[]
]θρωπωννε. []
 40]γυμνασιων[]
]δρωσποτη[]
]ταδεκεφαλ[]
]πολλα επ[]

Col. i

Col. ii

]πνοι λεπτοί. ά]πό κοιλίης όμοι-
 α. ούρησεν άθρο]ν. ύποστάσεις
 χριμνώδης, λ]ευκή, και πάλιν
 5]αρεα ψυχρά.] ένδεκάτη άπέ-
 θανεν. έξ άρχή]ς δε τούτω και
 διά τέλεος πνε]ύμα άραιόν, μέ-
 γα. ύποχονδρίο]υ παλμός συνε-
 χής. ήλική ως πε]ρί έτερα είκοσι.
 τήν μέν κατα]σεινήν του πά-
 10]θους και τήν καθ'] έκαστον αιτίαν
 όσο]ν ές τ[ών πα]ρακολουθησαν-
 τ]ων Ασκληπιάδης, ως έφην,
 συν]έγραψεν. ήμίν δε θεραπεί-
 15]αυ] αυτό μόνον προθεμένοις
 εύ]ρείν δυσκολιαν είκότως πα-
 ρέ]χει τό πράγ[μ]α. επί μέν γάρ
 τής] έναργείας ένήν πάντως
 τυ]νί μη σαφή τινα τής νόσου
 20]λόγ]ον λαβείν. άλλα οδν παρο-
 ξυ]μοίς και διαλείμμασιν
 . . .]ν παρηκολούθησεν και έ-
 κεί]νοις έκαστα τών προσαγο-
 μέ]γων δυνηόμεθα παραμε-
 25]τρ]εΐν. έν τούτοις δε τοίς παρ ά
]π]ποκράτους είρημένοις[ς] ού-
 . . .]ν ραδιώσ τοσοϋτον εύρ[εί]ν
 έν]ήν, άλλ' ώσπερ επίδρα[μ]εΐν
 τι]νος βουλομένου τά χαλε-
 30]πώ]τατα και άνελόντα τον άν-
 θρω]πον ή διγηγασθα[ι] καθα-
 ρώ]ς τά κατά τήν νόσον έοικεν
 . . .]η είναι. και μήν και τό
 έκ]τιθ]έναι μέν τά συμβάντα
 τώ] Cιλ]ηνώ, λέγειν δε τήν έ-
 35]πι]μ]είλειαν ώσανεί καθ' ήμέ-
 ραν] είσιόντα προς αυτόν ποι-
 ού]με]νον μηδέν γνώσκειω
 τών ά]ποβάντων, δυσωπίαν
 40]τινά κ]αι δυσχέρειαν τώ λόγω τί-
 θησιν] άλλομ. [.] [.] κ. [.] . ε[. .
 . . .]αρισως. [.] [.] [.]
]λ[] ω[

]προς τώ και τ. []
]πον αναγκ[]
]φιλιατρουςω[]
 5]συναφθήσεςθ[αι. Cιληνός ήκει
]επί [τ]ού πλατ[αμ]ώνος πλησί-
 ον τών Ευ]αλ[α]ίδεω. εκ κόπων
 και πότων κα[ι] γυμνασιών ά-
 10]καιρών πυρ [ε]λαβεν. ήρξάτο δε
 πονείν και ό[σφ]ύν, και κεφαλής
 βάρος και τρα[χ]ήλου σύντασις. ά-
 πό δε κοιλίης τή πρώτη χολώδεα,
 άκρη[τα, έπαφρα, κατακορέα πολ-
 15]λά δι[ή]λθεν. οδρα μέλαιναν υπό-
 στασιν έχ[οντα, διψώδης, γλώσ-
 σα επίξη[ρος. νυκτός ούδέν έκοι-
 μήθη. χρ[]
]παρρασημη[] υ
]οσον ιςχυ[]
]ασαι τών αδ[]
 20]αι δόξασμε[] άν-
]θρώπουςπ[]
]κη παρειχ. []
]αιτιων αλλ[]
]σοικ κατά τη. []
 25]νόμενα και τ[]
]τας έν ύγροίς []
]εποίει μετεμ[]
]η κοιλίας δύσι[] κου-
]φισμοϋ. γνομη[εν
 30]δε και λύσεως [] συν-
]εβαινεον οδν []
]νοσητητην []
]διαμαρταν[]
]να διημαρτ[]
 35]την αναφορ[αν
]ιδείν δε τολ[]
]των τώ Cιλ[ηνώ
]θησάντων ε[] άν-
]θρώπων νε. []
 40]γυμνασιών [] ε-
]δρως από τή[ς
]τα δε κεφαλ[]
]πολλα επ[]

Col. i

2] , low trace 4] , high crossbar touching ν 7] , end of stroke touching crossbar of π 9] , trace just above mid-level 11] , an oblique descending from left to right, with damaged surface on the right [, an upright followed by the lower part of an oblique descending from left to right; the foot of an upright 12] , the right-hand arc of a circle 14] , oblique descending from left to right 15] , small broken right-hand arc of a circle high in the line, with a trace on the line 16] , high trace [] , upright with blob at top; tail of e.g. α 20] , shallow curve on the line touching σ 24] , lower part of upright or left-hand arc of a circle joined by a crossbar above mid-level to an upright with a right-facing hook at its foot [, on either side of a gap, the top of an upright and a high trace 25] , trace above mid-level [, high trace 27] , shallow diagonal touching upright at mid-height, η or λ [] , speck above mid-level; upper arc of a circle, followed by foot of upright 28] , upright on the edge 30] , high and low traces 35] , lower half of λ or χ 36] , crossbar touching upright just above mid-level, η or ϵ 40] , [] , left side of round letter; high speck; two high traces [] , top and left side of round letter; top of upright; high trace; crossbar of τ or π 41] , beginning of horizontal just above mid-height, probably τ [] , right-hand half of μ or perhaps λ ; upright touched above mid-level by a descending oblique 42] , [] , a descending oblique joining an upright on the lines, e.g. ν ; λ or χ [] , trace on the line, close to ω

Col. ii

1] , left-hand arc 4] , a trace on the line closely followed by an oblique descending from left to right; a high trace [] , left side of large round letter 22] , high trace 23 s.l.] , foot of ascending oblique 24] , trace on the line 29] , upright, with left-facing hook at foot and blob at top; μ , as at 27, 34-5, rather than ν 34] , high crossbar 35] , high trace 39] , edge of left-hand arc

'... Light sleep. Similar evacuations. Urinated copiously, sediment thick like meal, white, and again extremities cold. On the eleventh day, perished. From the beginning right to the end his breathing was rare and deep. Continual throbbing of the hypochondrium. Age about twenty.'

Asclepiades, as I said, described the condition of the disease and the cause in each part, (insofar as these can be inferred from the) accompanying (symptoms). But to us, whose purpose is merely to find a treatment, the act reasonably causes discontent. For as far as the manifest facts are concerned, it was certainly possible (for someone) to get an unclear account of the disease. However, he concentrated (too much?) on paroxysms and intervals and on those things <by which> we shall be able to measure out each of the things that are prescribed. But in these things said by Hippocrates it was not possible to find anything so easily, but, as though someone wanted to run through the most serious (symptoms) and those which killed the man (i.e. Silenus) rather than to describe clearly the matters concerning the disease, there appear(s) to be ... And what is more, the practice of (setting out) what happened to Silenus, but claiming, as if he were making daily visits to him to carry out the treatment, that he knew nothing of what resulted, creates a certain shamefacedness and difficulty for the account ... besides the ... necessity ... are interested in medicine ... be connected to ...

'Silenus lived on the flat area near Eualcidas' place. After fatigue, drinking, and ill-timed exercise, fever took hold of him. He began to feel pain also in the loins, and there was heaviness of the head and tension of the neck. From his bowels on the first day there passed bilious, unmixed, frothy, dark-coloured, and copious stools. Urine with black sediment. Thirsty, tongue dry. At night no sleep.'

'... take note of (?) ... strong/strength ... person(s) ... offered ... causes ... in moist ... was making ... flux of the bowels ... alleviation ... and evacuation ... Therefore it happened that (?) ... mistaken ... was mistaken ... reference ... see ... to Silenus ... persons ... exercise ... sweat from the ... head ... much ...'

Col. i

1-8 Lemma (ii 688.4-8 L. = i 204.15-19 Kw.).

1 AV Gall. have $\delta\epsilon$ after $\alpha\pi\acute{o}$. Contrast ii 10-11, where $\delta\epsilon$ is included in the same phrase: $\acute{\alpha}$ | $\pi\acute{o}$ $\delta\epsilon$ $\kappa\omicron$ | ι | λ | η | ϵ .

At i 5, 5231 has a $\delta\epsilon$ not given by the other witnesses. Cf. 5222 2 ($\alpha\pi\omicron$ $\delta\epsilon$ $\kappa\omicron$ | ι | λ | η | ϵ , with a $\delta\epsilon$ not present in the other witnesses), 3 ($\delta\epsilon$ 5222 AV, omitted by Gall.).

2 After $\acute{\alpha}\theta\rho\acute{o}\nu$, AV and Galen in his lemma and in two other places (Anastassiou-Itmer, *Testimonien zum Corpus Hippocraticum* ii.1; cf. I. Garofalo, A. Lami, *Galenos* 7 (2013) 25-8) have $\acute{\alpha}\theta\rho\acute{o}\nu$ $\kappa\epsilon\iota\mu\acute{\epsilon}\nu\omega$ (variants: $\acute{\alpha}\theta\rho\acute{o}\nu$ $\kappa\epsilon\iota\mu\acute{\epsilon}\nu\omega$; $\kappa\epsilon\iota\mu\acute{\epsilon}\nu\omega$, $\kappa\iota\upsilon\omicron\mu\acute{\epsilon}\nu\omega$ Galen). It is omitted here, no doubt due to *saut du même au même*. $\acute{\alpha}\theta\rho\acute{o}\nu$ $\kappa\epsilon\iota\mu\acute{\epsilon}\nu\omega$. The other witnesses have $\acute{\alpha}\theta\rho\acute{o}\nu$ $\kappa\epsilon\iota\mu\acute{\epsilon}\nu\omega$. The fact that in the next line the papyrus has λ | η | ϵ | ν , which should agree, suggests that this is merely a copyist's error.

3-4 $\kappa\alpha\iota$ $\pi\acute{\alpha}\lambda\iota\nu$ | [$\acute{\alpha}$ $\kappa\rho\epsilon\alpha$ $\psi\upsilon\chi\rho\acute{\alpha}$]. The other witnesses have $\acute{\alpha}$ $\kappa\rho\epsilon\alpha$ $\pi\acute{\alpha}\lambda\iota\nu$ $\psi\upsilon\chi\rho\acute{\alpha}$. For the supplement, cf. *Epid. III* case 12 (iii 66.5 L. = i 223.25-6 Kw.) $\kappa\alpha\iota$ $\pi\acute{\alpha}\lambda\iota\nu$ $\acute{\alpha}$ $\kappa\rho\epsilon\alpha$ $\psi\upsilon\chi\rho\acute{\alpha}$.

5 $\delta\epsilon$: not in AV or Gall. Cf. i n.

9-13 The observation that Asclepiades described the cause of the disease recalls the complaints of other medical writers about the preoccupations of Asclepiades and his followers. For example, Dioscorides protests that certain Asclepiadeans wasted too much time explaining the medicinal properties of plants in terms of Asclepiades' particulate theory of matter: praef. 2 (i 2.3-5 W.) $\tau\eta$ $\delta\epsilon$ $\tau\eta$ ϵ $\alpha\iota$ $\tau\iota$ α $\kappa\epsilon$ $\nu\omicron$ $\phi\omega$ $\nu\iota$ α ϵ ι ς δ γ $\kappa\omega$ ν δ ι α ϕ \omicron ρ α ς ϵ κ α σ τ \omicron ν α υ τ $\acute{\omega}$ ν (sc. $\tau\acute{\omega}$ ϕ α ρ μ $\acute{\alpha}$ κ ω ν δ ι α ϕ \omicron ρ α ς). Likewise Galen criticizes the Asclepiadean Sextius Niger, singled out by Dioscorides too, for indulging in $\tau\acute{\omega}$ κ α $\tau\acute{\alpha}$ τ α ϵ α ι τ ι α λ \omicron γ ι μ $\acute{\omega}$ ν in his otherwise admirable work on *materia medica* (Sextius Niger fr. 4 Wellmann (iii 147) ap. Gal. *SMT* 6 prooem. (xi 794.16 K.)).

9 $\kappa\alpha$ $\tau\alpha$ | $\kappa\epsilon$ ν η ν . $\acute{\alpha}$ $\nu\omicron$ | ζ $\kappa\epsilon$ ν η ν , 'cure', would be too short, and would not contrast with $\theta\epsilon$ ρ α π ϵ ν | τ α ν (13-14), as the context requires. Asclepiades himself may have used the term $\kappa\alpha$ τ α κ ϵ ν η ν : cf. Cass. *Probl.* 74-5-6 Garzya (p. 64) = 73 Ideler (i 165.10-12), influenced by Asclepiades, η γ α ρ τ \omicron υ $\acute{\alpha}$ θ ρ ϕ $\acute{\omicron}$ β \omicron ν κ α τ α κ ϵ ν η ν κ α ι η π ϵ δ ϵ ι ς ϵ ν κ τ α ϵ ι ϵ ς ϵ ν τ ι π ϵ ρ ι τ \omicron ν σ τ \omicron μ α χ \omicron ν κ α ι τ η ν κ \omicron ι λ ι α ν . Cf. also ps.-Gal. *Def. Med.* 464 (xix 459.4 K.).

12 $\acute{\omega}$ ς ϵ ϕ η ν . The previous discussion referred to here may well have been in reference to the first case history, that of Philiscus, to which Asclepiades presumably had a similar approach.

15-16 δ υ κ \omicron λ ι α ν ϵ ι κ $\acute{\omicron}$ τ ω ς π α | ρ $\acute{\epsilon}$ | χ ϵ ι τ \omicron ν π $\acute{\alpha}$ γ | μ | α . 'I should take the reference to be to the matter at hand, rather than to an "act" of Asclepiades: "the matter reasonably causes difficulty". Then $\acute{\epsilon}$ π ι will be temporal: cf. e.g. Dem. 21.72 for the contrast between the actual events and a report (24-5 below)' (WBH).

18 τ ω | $\acute{\iota}$: \omicron ι τ ι | $\acute{\iota}$.

19-24 The subject of π α ρ η κ \omicron λ \omicron υ θ η ς ϵ ν at 21 must still be Asclepiades, who is portrayed here as concentrating (perhaps excessively: see 21 n.) on the paroxysms and the intervals between them in working out what treatment to offer. Cf. Cels. 3.4.15 (CML I 107.24-6), a passage likely to be based on Asclepiades' writings, criticizing the Hippocratic theory of days: *medicus non numerare dies debeat, sed ipsas accessiones intueri et ex his coniectare quando dandus cibus sit*. Asclepiades is cited by name at 3.4.12 (CML I 107.2); Cael. Aur. *Cel. Pass.* 1.14.108 (CML VI.1 82.24) also attests to Asclepiades' rejection of the notion of critical days. (Galen is concerned with the periodicity of the paroxysms in his comments on Silenus' case, observing that the paroxysms occurred more on the odd-numbered days (xviiA 262.11-12 K. = CMG V.10.1 131.30-31), δ ν τ ω ν γ ϵ τ $\acute{\omega}$ ν π α ρ \omicron ξ υ μ $\acute{\omega}$ ν $\acute{\epsilon}$ ν τ α ι ς π ϵ ρ ι κ α ι λ λ \omicron ν , but he places this in the context of his theory of critical days.) Following after the datives at 19-20, $\acute{\epsilon}$ | κ ϵ | γ \omicron ι ς is naturally read as still governed by π α ρ η κ \omicron λ \omicron υ θ η ς ϵ ν , but this makes little sense of what follows. I suggest that the relative pronoun \omicron ϵ ς dropped out by haplography after $\acute{\epsilon}$ | κ ϵ | γ \omicron ι ς . ('I should understand "still, it (sc. the disease) followed certain (21 τ ι ϵ | ν) paroxysms and intervals, and by them we shall be able to measure each of the things being applied"' (WBH).)

21 ... | γ . $\acute{\alpha}$ γ α | ν would suit the context well.

22-23 $\acute{\epsilon}$ κ α σ τ α τ $\acute{\omega}$ ν π ρ \omicron ς α γ \omicron | μ $\acute{\epsilon}$ | ν ω ν . The Hippocratic source text records almost nothing about the treatment that Silenus received. Asclepiades, by contrast, in his commentary clearly set out his own recommended treatment for the disease (cf. esp. i 34-6); the author's criticism of his approach at i 9-16 is that he included much superfluous material besides the treatment.

25-6 οὐ[]ν. οὐ[δέν]ν is likely. WBH proposes οὐ[κ ἔ]ν, 'it would not be possible'.

26-7 εὐρ[εῖ]ν | [έν]ην supplied by WBH.

30-31 καθα[ρῶ]ς supplied by WBH.

31-2 'I should punctuate before τὰ κατὰ τὴν νόσον and supply εὐτελλ[ῆ] at the start of 32, "the matters connected with the disease appear to be insignificant". διηγῆσασθα[ί] καθα[ρῶ]ς (30-31), "describe clearly", has the same object as ἐπιδρα[μ]εῖν (27), "treat summarily" (WBH).

32-40 'I take the point to be that Hippocrates merely reports the symptoms and behaves shamefacedly as though he knew nothing of the results (38) of his daily ἐπιμέλεια' (WBH).

34 τῷ Cιλ[η]νῷ. The scribe will have written Cειλ-, as at ii 37.

39-40 [τινά and τ[ί]θησ[ω] supplied by WBH.

Col. ii

1-2 Perhaps ἀνθρω[π]ων, referring to Silenus, as at i 29-30 (cf. ii 20-21, 38-9).

4-16 Lemma (ii 684.11-686.1 L. = i 203.11-18 Kw.).

4 Cιληνός (restored). As at ii 37, Cειλ- will have been written (cf. i 34).

7 πόντων κα[ί] with A and GalL: V has ἀπό τῶν.

9 πονεῖν: πονέειν AV (Kühlewein xcvi) and GalL. Kühlewein prints the contracted form.

καὶ ὀ[σφύ]ν: so V GalL (καὶ ὀσφύν M); A has καὶ ὀσφύς. Cf. also Galen's comment that Hippocrates ἔφη πονεῖν αὐτὸν ὀσφύν (xviiA 264.1 K. = CMG V.10.1 132.20). Littre deleted καί, while Kühlewein conjectured κατ' ὀσφύν, but emendation is unnecessary.

13 οὐρα μέλαιναν (restored): οὐρα μέλαινα μέλαιναν, given by AV GalL, will not fit. For the assumed *saut du même au même*, cf. i 2.

23 α[μ]ε[λ]λ[α]: presumably ἄμ[α] corrected to ἀλλ[α].

28 η κοιλάς ῥυτι[ς]. E.g. ἡ κοιλάς ῥυτι[ς], referring to the evacuations suffered by Silenus on the first day (10-13).

36-7 E.g. τῶν συμβάν[των] τῷ Cιλ[η]νῷ; cf. i 33-4. Otherwise | τῶν with -θηράτων (38).

37-8 Perhaps παρακολου[θη]ράτων with reference to the symptoms accompanying Silenus' disease: cf.

i 11-12.

40-42 These lines appear to be concerned with Silenus' ill-timed exercise, which was one of the factors presented as leading up to his initial fever (7-8). Cf. also day six of his illness (ii 686.9-10 L. = i 204.4 Kw.): ἔκτῃ, περὶ κεφαλὴν μικρὰ ἐφίδρωσεν.

D. LEITH

5232. ON HAEMORRHOIDS

22 3B.19/G(4-5)c

4.7 x 27 cm

Second/third century
Plate III

Parts of two columns with intercolumnium, written against the fibres on the back of a documentary text running in the same direction, of which only line ends survive. Col. i of the medical text gives line ends, and col. ii is preserved to a width of about 8 letters. The upper margin of each column is partially preserved, measuring 1.6 cm at its deepest. The lower margin of the second extends to a depth of about 2 cm. Col. ii has 51 lines, and col. i will have had 52. The intercolumnium is 0.3-0.8 cm wide. Col. ii is preserved to a width of 2.8 cm at its widest; the original column width will have been approximately 9 cm (c. 26-8 letters). The

column height is 23.5 cm.

The text is written in a small informal hand, leaning to the right, with some ligatures (e.g. *αι, αυ, ει*). *η* is h-shaped. *μ* is rounded, with a deep belly. *ξ* has a flat top and bottom with a central arc touching the base. *ω* is small and angular, with a flat base. Cf. the first hand of V 842 (*GLH 17b*), assigned to the second/third century, and VII 1019 + XLI 2948 (*GMAW² 66*), also assigned to the second/third century.

The text is divided into sections, each introduced by an indented heading with forked paragraphus above and paragraphus below (ii 6-7, 31): cf. the contemporary papyri PSI III 252 (MP³ 2364, a medical fragment of unknown provenance) and XLII 3007. A quotation at ii 17-20 is marked by marginal *diplai*, together with paragraphi under the first and last lines and a high point at the end: cf. e.g. P. Harr. I 1 ii 42-5, LIII 3699 fr. (d) ii, and the Berlin *Theaetetus* commentary (MP³ 1393), in which the lemmata are comparably signalled. There is a correction at ii 4, and a downward-pointing *ancora* (?) in the margin at the level of ii 37-8, indicating that an omitted passage was added in the lower margin: cf. 5220 fr. 2.9; McNamee, *Sigla and Select Marginalia* 13. There is no indication that either of these corrections was carried out by a different hand.

Midline dot is used as punctuation at ii 20 and 23. Initial *ι* and *υ* are marked with diaeresis (ii 18, 19, 24, 26, 33, 46). A supralinear bar can replace *ν* at line end (i 21, 25, 26; contrast 18, 24). *γ* at i 22 may be a numeral. Horizontal strokes and tails are frequently extended at line end.

The intelligible part of the text deals with haemorrhoids. Surgery for the condition is introduced at ii 31. The subject of ii 1-5 is unclear, but haemorrhoids are probably already the main topic: cf. i 43]μορ|. The central section (ii 6-30) may deal with the question whether all haemorrhoids should be removed. The passage quoted at ii 17-20 is the Hippocratic *Aph.* 6.12 (iv 566.7-8 L. = 451.2-3 Magdelaine), which states in the usual text that 'when a patient has been cured of chronic hemorrhoids, unless one be kept, there is a danger lest dropsy or consumption supervene' (tr. W. H. S. Jones, Loeb vol. iv p. 183). Hippocrates is named at ii 24.

In his commentary on the aphorism (xviiiA 22 K.), Galen gives a justification of the usual form of the aphorism in line with his own pathology; cf. e.g. Orib. *Syn.* 9.40.1-3 (CMG VI.3 300.29-301.4), Steph. *In Aph.* (CMG XI.1.3.3 214.12-216.7); Paul. Aeg. 6.79 (CMG IX.2 123.20-124.11); Paul. Nic. 108.1-29 Ieraci Bio (pp. 199-200). Aët. 14.5 (in a section provisionally edited by A. M. Ieraci Bio, "Tracce della fortuna di terapie ippocratiche in età bizantina", in I. Garofalo et al. (edd.), *Aspetti della terapia nel Corpus Hippocraticum* (1999) 455-65 at 462), on the other hand, insists that Hippocrates meant that *all* haemorrhoids must be removed. He states that ἢν μὴ φυλαχθῆ should be read in *Aph.* 6.12 rather than ἢν μὴ μία φυλαχθῆ, and that the phrase refers to the need to prescribe the appropriate regimen for the patient (i.e. 'unless (the patient) is maintained (by diet)'). There is no indication that the papyrus had Aëtius' version of the aphorism (cf. ii 18, 22-3 nn.). The philological nature of Aëtius' remark may suggest that this disagreement was discussed in the tradition of commentaries on *Aph.*, which goes back at least to the Herophilean Bacchius of Tanagra in the mid-third century BC (Gal. *Hipp. Aph.* 7.70 (xviiiA 186.14-187.4 K.) = *Ba.* 9 von Staden (p. 495)). Moreover, as Ieraci Bio 463 points out, in the Hippocratic treatise *De haemorrhoidibus* it is twice prescribed that

all haemorrhoids should be removed (by cautery, *Haem.* 2 (vi 436.20–21 L. = 147.1–2 Joly); by drugs, *Haem.* 7 (vi 442.19–20 L. = 150.3–4 Joly)). On the other hand, the Hippocratic *De diaeta acutorum (spurium)* 62 (ii 516.12 L. = 95.16 Joly) also warns that one haemorrhoid should be left untouched. Internal contradictions of this sort in the Hippocratic Corpus certainly fuelled debates among ancient interpreters, and such a controversy may lie behind this section of the text. There are perhaps indications that divergent opinions were set out: the reference to the view of 'the majority' at ii 8; οἱ δέ at ii 14; and the placing of the quotation in the middle of the passage, which may indicate the author's need for authoritative support for his own position. On the other hand, the fact that the author of this text focuses on the question does not suggest that he was aware of different exegetical traditions. The point may simply have been to draw attention to and endorse certain Hippocratic views about the treatment of haemorrhoids which were perhaps not generally followed by medical practitioners.

Other indirect witnesses to *Aph.* on papyrus are given at CPF I.2* 18 Hippocrates 22T–24T; BKT III 22–6 ii 10–12 (*Aph.* 1.1); P. Ant. III 124 fr. 1(b).8–10 (*Aph.* 1.16); and P. Ryl. III 530, a kind of commentary on *Aph.*, of which the preserved sections are concerned with parts of books 4 and 5. For the direct witnesses, see 5219.

There is no firm basis for an attribution, but for some resemblances to extant accounts of haemorrhoid surgery, see the commentary, esp. ii 32–7 nn. For surgical texts on papyrus, cf. esp. M.-H. Marganne, *La Chirurgie dans l'Égypte gréco-romaine d'après les papyrus littéraires grecs* (1998); also e.g. 5240.

Col. i	Col. ii		
] .αι	δησζητη[	δησ ζητη[
]υ	πολυχρον[	πολυχρον[
]ουc	ραποτεδ .[	ρα ποτε δε[
] .α	||τὰ|κεξαιτω[	||τὰ|νο'ς εξ αυτω[ν	
5]να	5 >μενκατα .[	>μεν κατα .[
]ραι	ειδεον[	ει δέον[
]με	τασαιμ[	τὰς αίμ[ορροΐδας	
]ειc	τοιcπλει[	τοιc πλει[cτοιc	ε̅δο-
] .α	ξεναναι .[	ξεν αναιρ[ειν	
10] .αε	10 φυσιcπαθ .[	φύσιc παθ .[
]ει	ωcπεραλλ[	ώcπερ άλλ[
]ερ	πρωτηςγε[	πρώτης γε[
]ε	καιηδιατω[	και η δια τω[ν	
]α	οιδελεξα[	οι δελεξα[
15] .	15 αποτων .[	απο των .[
]ειc	τολογωτ .[	το λόγω τ .[

] .	>μενωφη[	>μένω φη[ci	αιμορροΐδας χρο-
]εν	>νιουcιη .[	>νίουc ιηθ[έντι, ην μη μία φυλαχθη, κίν-	
] .ο	>δυνocυδ[	>δυνoc υδ[ρωπα επιγενέcθαι η φθί-	
20] .ρι	20 >cιv .του[	>cιv . του[
]αcε̅	τηρηθη .[	τηρηθη .[
] .α	προcτη[	πρòc τή[ν	
]ηγ	cιv .του[	cιv . του[
]ων	ιπποκρ .[	Ιπποκρά[τ	
25] .με̅	25 αριcτηδ[	άριcτη δ[	ε̅-
] .ω̅	cτιvιδ[	cτιv ιδ[
]θειc	cιouc .[	cιouc ε .[
]αι	αιμορρ[	αίμορρ[
]κα	χθηοτ .[	χθη οτι[
30]ν	30 >αιμορρο[	>αίμορρο[ι	
]θι	χει .[	χειρ[ουργία	
] .	προοικο[	προοικο[νομ	
]υ	τευπο .[	τε υπο .[
] .	καικομ .[	και κοιμ[
35] .	35 δετηνχε[	δε τήν χει[ιρουργίαν	
]α	οπαcχων[	ο πάcχων[
] .	δρουωcε[	δρου ώc ε[
] .	τοτεαγ .[	τοτε αγγ[
] .	εκτρεπε[	εκτρεπε[
40]κραι	40 . . . τειδ[	. . . τειδ[
] .	. . . ναιε[	. . . ναι ε[
] .ειc	τιθεc .[	τιθεc .[
]μορ	χ[	χ[
] .	χαιεξ[	χαι εξ[
45]η	45 εκac .[	έκαcτ[
]ευ	τωcυ .[	τωc υ .[
. . .	. . . αιπ .[	. . . αιπ .[
. . .	. . . κ[	. . . κ[
. . .	. . . τι[	. . . ατι[
. . .	. . . ρμ[	. . . ρμ[
. . .	. . . κ .[	. . . κ .[
. . .	. . . κ .[	. . . κ .[

Col. i

1] , edge of right-hand arc of a small circle 4] , end of a stroke joining loop of a 9] ,
 end of a stroke joining loop of a 10] , vertical stroke, slightly bowed, touching loop of a 15] ,
 long horizontal at mid-line level, speck on edge below 17] , long horizontal at mid-line level, speck
 on edge above 19] , diagonal rising gently from left to right, with trace above on edge 20] ,
 diagonal rising steeply from left to right, curving to right at top, as of υ 22] , rubbed trace at mid-height
 23] , end of horizontal meeting short vertical at top 25] , traces suggesting the right-hand side of a
 rounded letter, with upright on the right 26] , right-hand arc of circle joined by top of upright at top
 32] , traces suggesting right-hand side of o (surface stripped on left) joined from left at top 34] , long
 descender curving to left, joined from left near top 35] , indistinct trace 37] , oblique descending
 from left to right, abraded on the left, with further ink on the edge 38] , upper left-hand arc of a circle
 39] , diagonal rising from left to right, with long horizontal extending from foot 41] , damaged traces,
 apparently a round letter 42] , stroke touching ε at mid-height 44] , indeterminate traces
 followed by long descender curving to left

Col. ii

3] , back of round letter (εθoc) 4 s.l. , two uprights close together, joined at the top 5] ,
 foot of vertical 9] , on the edge, a vertical descending below the line 10] , an upright with an
 angular turn-up 15] , vertical, with horizontal projecting from its foot, and small hook pointing to
 right at top 16] , upright on the edge, hooked to left at foot; above, a short crossbar at letter-top level,
 extending to the edge 18] , e.g. the lower left-hand corner of θ 21] , specks 24] , low
 blob 27] , upright, high traces to right 29] , upright 31] , specks below the line, perhaps
 a descender 33] , perhaps left-hand parts of εθoc 34] , upright 37 mg. Further traces above
 and to the right of the *ancon* 38] , upright, further traces to right at top 40] , damaged traces
 41] , rubbed traces 42] , left-hand side and cap of ε or θ 45] , left-hand end of high cross-bar,
 trace on line 46 τ, right-hand end of high cross-bar] , foot of vertical 47 α, e.g. end of upper
 branch of κ] , trace on line 48] , upright joined at foot from left, further speck on a single fibre to
 left 49] , short high trace on edge with tail emerging, touching τ on left 51] , low trace touching
 κ] , low loop as of α, ο, etc., with further ink above

'... enquire (?) ... long-lasting ..., and sometimes (?) ... from them ...

'Whether it is necessary ... haemorrhoids.

'To most ... it seemed best to remove ... nature ... just as other (?) ... first ... and the ... by means of
 ... but the ... from the ... saying (?) ... says (...)' "for one cured of chronic haemorrhoids, unless one (?) is
 saved (?), there is a danger that dropsy or consumption may supervene." This (?) ... preserved (?) ... to the ...
 Hippocrates ... best ... is ... haemorrhoid(s) (?) ... that ... haemorrhoid(s) (...)

'Surgery (...)

'Prepare in advance ... by ... and ... the surgery ... the patient ... as ... evert ... place ... each ...'

Col. i

43] μορ: perhaps α[μορ][ροϊ- (but α[μορ][ραγία is also possible).

Col. ii

1 ζήτη[. A form of ζήτημα or ζήτησις? The problem posed in the heading at 6-7 could be an example
 of a ζήτημα.

2 πολυχρον[. Perhaps of haemorrhoids: cf. χρο[ν]ίους in the Hippocrates quotation (17-18).

3 ρα ποτε δε[. 'Perhaps the question is which approach is to be preferred in the treatment of haemor-
 rhoids, and the preserved sequence belongs to a general statement on the various types of treatment available.
 Cf. Gal. *MM* 14.13 (x 989.11-14 K.) κατά ταυτά σοι κρίνοντι τήν ἀρίστην ὁδὸν τῆς ἰάσεως ... εὐρεθήσεται ποτε

μὲν ἢ διὰ τῆς χειρουργίας αἰρετωτέρα, ποτὲ δὲ ἢ διὰ τῶν φαρμάκων; also 6-7, 13 nn. Then ρα may represent
 a comparative such as αἰρετωτέ[ρ]α, perhaps in agreement with θεραπεία, and ποτὲ μὲν will have preceded; ἐξ
 αὐτῶ[ν] may be part of a reference to the choice to be made from among the possibilities mentioned' (WBH).

6-7 εἰ δέον [| τὰς αἰμ[ορροΐδας. εἰ δέον [ἐστὶν ἀναρῆν πάσας] | τὰς αἰμ[ορροΐδας ('Whether it is
 necessary to remove all haemorrhoids') would be a suitable heading.

8-9 τοῖς πλε[ι]στοῖς ... ἔδο[ξ]εν ἀναρῆν. The aorist ending at 9, the citation of Hippocrates, and the
 quotation of *Aph.* 6.12 point to a reference to the majority of 'ancient' doctors, whether τῶν παλαιῶν or τῶν
 ἀρχαίων. This majority view was no doubt that one haemorrhoid should be left, as stated in the aphorism that
 the author quotes and at *Acut. (Sp.)* 62 (ii 516.12 L. = 95.16 Joly). The opposing view, that all haemorrhoids
 should be removed, is not found in 'ancient' medical treatises except in *Haem.* (cf. introd.), a tract which
 certainly did not hold the authority of *Aph.* A possible reconstruction: τοῖς πλε[ι]στοῖς τῶν παλαιῶν ἔδο[ξ]εν
 ἀναρῆν πάσας παρὰ μίαν ('The majority of the ancients thought they should remove all but one'). WBH pre-
 fers a more general reference, with e.g. τῶν ἰατρῶν rather than τῶν παλαιῶν or τῶν ἀρχαίων.

το φύσις. In relation to the view that one haemorrhoid must be left, there may be a reference here to the
vis medicatrix naturae, in particular her expulsion of unhealthy matter through the haemorrhoid, as described,
 e.g., in Gal. *Hipp. Aph.* 6.12 (xviiiA 22 K.): see introd. Theophilus' commentary on this aphorism refers to the
 action of Nature in such a way: ἡ φύσις ἐν ἔθει ἦν τοῦ ἐκείθεν (sc. from the liver) ἀποκαθαίρειν τὰ περιττά (ii
 492.6-7 Dietz). Line 9 could accommodate ἡ γὰρ after the supplement given in 8-9 n.

παθ[.] παθῶ[ν WBH, comparing for the ω e.g. 13 below.

12 πρώτης γε[. 'E.g. ἀπὸ τῆς] πρώτης γενέσεως' (WBH).

13 ἢ διὰ τῶ[ν]. 'Perhaps e.g. ἢ διὰ τῶ[ν] φαρμάκων θεραπεία: cf. 3 n. Aët. 14.5 (Laur. plut. 75.7 f. 65r; ch.
 6, col. 840 Cornarius (1549)) considers surgery the ἀσφαλετέρα ... καὶ σύντομος θεραπεία τῶν αἰμορροΐδων,
 but notes that others, due to cowardice, prefer some or all of them to be removed διὰ φαρμάκων' (WBH).

14 οἱ δελεξα[may introduce a new party to the debate: supply e.g. οἱ δ' ἐλεξα[ν] or οἱ δὲ λέξα[ντες.

16-17 το λόγῳ τ. [...] μὲν φη[σί]. These lines may refer to the source of the subsequent quotation.
 -] μὲν φη[σί] may be τῶ προκει[μ]ένῳ, i.e. 'the topic proposed', referring to the problem set in the heading above at
 6-7. 'Perhaps e.g. συγκρατέθεν] το λόγῳ, with reference to the quotation in lines 17-20, and then e.g. εἶρη] μὲν φη[σί]
 (sc. "by Hippocrates"), φη[σί] γάρ. A stop is used elsewhere (20, 23), but may not have been needed in a case
 like this' (WBH).

17-20 The marginal *diplai* and the paragraphus indicate that the quotation began at 17. It was apparently
 introduced by φη[σί]. The nominative κίν[η]σις at 18-19 confirms that the quotation is not in *oratio obliqua*.
Hr. Aph. 6.12 is printed as follows in Magdelaine's edition (451.2-3 = iv 566.7-8 L.): αἰμορροΐδας ἰθύντι
 χρονίας, ἦν μὴ μία φυλαχθῆ, κίνδυνος ὑδρωπα ἐπιγενέσθαι ἢ φθίσειν. αἰμ. ἰθθ. χρ. is the text of C^o MV^o Gal(MP)
 Steph Theo(UV) and the first quotation in Aët. 14.5; Littré's τῶ ἰθθ. χρ. αἰμ. is taken from I, a descendant of
 M. WBH notes that the second quotation in Aëtius agrees with the papyrus in respect of the word-order in
 giving αἰμ. χρ. ἰθθ., according to the manuscripts Laur. plut. 75.2 (f. 217r), 75.7 (f. 65r), and 75.21 (f. 167v); Ieraci
 Bio's provisional edition (cf. introd.), based on other manuscripts, has αἰμορροΐδας ἰθύντι χρονίας (II). 'The
 space before αἰμορροΐδας may have been filled by e.g. γάρ (cf. 16-17 n.) or οὐτω(ς) introducing the quotation'
 (WBH).

17-18 χρο[ν]ίους: for χρονίας. WBH notes that the same form is transmitted in both quotations in Aëtius
 14.5 in Laur. plut. 75.7 (ff. 64v, 65r), 75.13 (f. 16r), and 75.21 (f. 167v), and in other manuscripts at least in the
 first, according to Ieraci Bio's reports, and also in Paul. Nic. 108.27 Ieraci Bio (p. 200). For feminine χρόνιος in
 the Hippocratic Corpus, cf. the *Index Hippocraticus* s.v.

18 ἦν μὴ μία φυλαχθῆ is restored, but it is not certain that the papyrus had this form of the text. μὴ is
 the reading of C^o MV^o Gal(MP) Steph Theo(UV); the reading μὲν (FJE) has no authority. But the manuscripts
 of Paul. Nic. 108.27 Ieraci Bio (p. 200) omit μὴ, and μία was omitted in the version preferred by Aët. 14.5. 'To
 judge by the length of the following line, where the supplement is fairly uncontroversial, either μὴ or μία may
 have been omitted on the line, but any such omission may have arisen through scribal error alone, and may

have been made good: the evidence of the spacing alone is inconclusive' (WBH). Gal(M) and Paul. Nic. have διαφυλαχθῆ for φυλαχθῆ, but there is not likely to be room here for the preverb.

20 τοῦτον οὐ τοῦτο, referring to the aphorism or its content?

21 τηρηθη. [may correspond to φυλαχθῆ in the quotation. Perhaps the word belongs to a general paraphrase or explanation of the aphorism, or a defence of a particular interpretation.

22-3 πρὸς τῆ[ν] |ειν. Perhaps a reference to the purpose of leaving a single haemorrhoid: e.g. πρὸς τῆ[ν] τοῦ περιττοῦ αἵματος κάθαρ[σιν] (cf. Paul. Aeg. 6.79 (CMG IX.2 123.29) διὰ τὴν τοῦ περιττοῦ αἵματος ἐξοχέτευσιν) or πρὸς τῆ[ν] τῆς μελαίνης χολῆς ἔκκρι[σιν] (for the secretion of melancholic blood through haemorrhoids, cf. Gal. Hipp. Aph. 6.12 (xviiiA 22 K.)). WBH notes that πρὸς τῆ[ν] περιττοῦ αἵματος ἔκκρι[σιν] without the second article would be a better fit for the space as suggested by line 19. The sequence preserved at 23 exactly matches that preserved at 20, including the midline dot.

29 χθθ ὅτι [|χθη may suggest φυλα[χθη], and thus a reprise of the aphorism quoted above, perhaps in some sort of concluding statement. ὅτι, however, may point to e.g. ἐλέ[χθη] or ἐδε[χθη].

31 χειρ[ουργία]. Probably χειρ[ουργία] (τῶν) αἰμορροῖδων, though it is also possible that χειρ[ουργία] alone was written: cf. P. Strasb. gr. inv. 849.15 (ed. C. Magdelaine, in I. Andorlini (ed.), *Testi medici su papiro* (2004) 63-77; MP³ 2343.01), where there is space only for χειρ[ουργία], with P. Ross. Georg. I 20.84-5 χειρο[υρ-] γεία τοῦ | |τα[φ]υ[λώματος].

Haemorrhoid surgery is described by Paul. Aeg. 6.79 (CMG IX.2 123.20-124.11), Aët. 14.5 (e.g. Laur. plut. 75.7 f. 65; ch. 6, col. 840 Cornarius (1549)), and Cels. 7.30.3 (CML I 359.6-360.4). Little can be made of the present account except at the start, but the notes indicate some possibilities.

32 προουκο[νομ]. WBH notes that Aëtius' account begins in the same way, προουκονομῆσαι τοῖνυν χρῆ τὸν πάσχοντα διὰ τε ὀλιγοσυνίας καὶ ὕδρποσίας, κατὰ τὸ πλείστον δὲ καὶ κλύματος ἐνέσεως, ἅμα μὲν κομιδῆς χάριν τοῦ σκυβάλου, ἅμα δὲ κτλ.

34 κομι[σιν]. 'Perhaps e.g. κομι[δῆς] χάριν τοῦ σκυβάλου: cf. Aët. (32 n.)' (WBH).

34-7] δὲ τὴν χειρ[ουργίαν] | ὁ πάσχων [| δρου ὡς εἶ. We expect a description of the appropriate position (σχῆμα) for the operation, in particular after the reference to advance arrangements (32). Orib. Coll. Med. 44.11.2 (CMG VI.2.1 124.19-20), on the treatment of rectal abscesses, corresponds closely: πρὸς δὲ τὴν χειρ[ουργίαν] ὑπτίως σχηματίζέσθω ὁ πάσχων ἐπὶ παρῶν δρόμων πρὸς ἀγῆ λαμπρῆ. With two minor changes in word order, the text of the papyrus can be restored thus, giving lines of approximately the same length as 19 above:

πρὸς
δὲ τὴν χειρ[ουργίαν] σχηματίζέσθω
ὁ πάσχων ὑπτίως ἐπὶ δρόμον παρῶ-
δρου ὡς εἶ[

-δρου in particular is a distinctive sequence. Paul. Aeg. 6.79 uses similar language in his chapter on the surgical treatment of haemorrhoids, recommending that the patient be placed in a supine position in direct sunlight, σχηματίζαντες ὄν ὑπτίως τὸν κάμνοντα πρὸς ἀγῆ λαμπρῆν (CMG IX.2 123.25-6).

The textual overlap and congruence in subject matter may suggest that there is a link between the two texts. Oribasius' excerpt is derived from the work *On Surgery (Chirurgumena)* of the surgeon Heliodorus (late 1 AD), and apparently from its third book: Heliodorus is the last author named as a source by Oribasius (cf. the heading to 44.6 (CMG VI.2.1 120.29-30), Ἐκ τῶν Ἡλιοδώρου. Περὶ τῶν ἐν κατακαλύψει ἀποστημάτων), and scholia to this chapter, as well as the anonymous chapters 44.7 and 8, state that they are drawn from book 3 of his *Chirurgumena*. The scholion to 44.11.4 (CMG VI.2.1 124.32), citing a parallel from book 11 of Heliodorus' *Chirurgumena* for his use of the term κατιὰς, shows that he is still the source, and the congruence of this chapter's subject matter with that of the whole section, 'hidden abscesses', suggests that it likewise came from book 3. There is no surviving account of the surgery of haemorrhoids in Oribasius. Oribasius seems to have been remarkably faithful to the words of his sources (cf. R. de Lucia, 'Doxographical Hints in Oribasius' *Collectiones medicae*', in P. J. van der Eijk (ed.), *Ancient Histories of Medicine* (1999) 473-89, esp. 478-83; M.-H. Marganne,

'Un fragment du médecin Hérodote: P. Tebt. II 272', in *Pap. Congr. XVI* (1981) 73-8). Perhaps Heliodorus' surgical procedure for treating rectal abscesses was similar to his procedure for treating haemorrhoids, and he used the same language in each case to describe the position in which the patient should be placed (ii 37 might even be supplemented, e.g., ὡς ἐπὶ τῶν ἐν ἔδρα ἀποστημάτων (too long?), or ὡς εἴρηκα or εἴρηκαμεν). Thus the close verbal parallel between 5232 and Heliodorus' treatment of rectal abscesses might suggest that one author was using the other, or that 5232 was also written by Heliodorus. ('It may be risky to build on this resemblance. The position to be adopted for haemorrhoid surgery is likely to have been settled at an early stage, and the language is not very distinctive: cf. e.g. P. Lond. Lit. 166 ii 17-20 παρήγγειλαν | [γ]ὰρ ὑπτίως μὲν σχηματίζων τὸν | [π]άσχοντα κατὰ τινος ὀμαλοῦ κα[τ]᾽ ἀσθενάματος ὡς περὶ βάρου (Marganne, *Chirurgie* 37), iii 8-10 (ibid.), iv 6-9 σχηματίζαντες | γὰρ τὸν πάσχοντα κοινότερον | ἐπὶ πάσης διαφορᾶς ὑπτίως κα[τ]ὰ βάρου ἢ κα[τ]ὰ καν[ὸν] δώ[μα]τος (ibid. 38); P. Ryl. III 529.66-81 (ibid. 112-13)' (WBH).)

37 mg. The traces above and to the right of the *ancona* are puzzling. κάτω was not written.

38 ἄγγ[ιστρον] (for ἄγκιστρον: cf. 5240 fr. 1.1, 4 for the spelling) read and supplied by WBH: the first γ resembles that at 12, the second that at 16. The use of the hook in haemorrhoid surgery is described by Aëtius and Celsus (7.30.3B (CML I 359.14-17)).

39 ἐκτρεπε[σθαι] (e.g. ἐκτρεπέ[σθαι] probably refers to the action of everting the anus in order to gain better access to the haemorrhoids: cf. ἐκτροπήν in Paul. Aeg. (CMG IX.2 123.24) and Aët.

41 . . ναι εἶ. 'Perhaps δι[δόναι], εἶτα (or εἴπειτα): cf. Aët. χρῆ ἐκάστην τῶν αἰμορροῖδων ἀνατείνειν τῷ ἀγκίστρῳ, ἔπειτα περιχαράσσει τὴν βάσιν, εἶτα περιστρέφοντα τῷ ἀγκίστρῳ δίδοναι τὸ ἀγκιστρον κρατεῖν τῷ ὑπέρτῳ' (WBH).

42 τιθεσ[θαι]. 'προσ[τίθεσθαι], ἐν[τίθεσθαι]: Cf. Aët. μετὰ δὲ τὴν τούτων ἐκτομήν, ἔχουσι ξηρὸν προστίθεμεν καὶ σπογγίαν διαδεδεμένην λίνῳ ἐντιθέντες ἔξω τὴν ἀρχὴν τοῦ λίνου καταλείπομεν' (WBH).

44 χαι εἶ[. 'ἀρ[χαι] εἶ[ω]: cf. 42 n.' (WBH).

45 ἐκάστ[η]. 'Each of the haemorrhoids:' (WBH).

50 . .]ρμ[. 'φαρμακ[ακ-?]' (WBH).

D. LEITH

5233-4. ON ACUTE DISEASES

These two papyri preserve fragments of an unknown medical treatise on the subject of acute diseases, with substantial textual overlaps between 5233 i and ii and 5234 fr. 1. There are minor divergences, not affecting the sense. δέ is present at 5233 ii 8, but omitted at 5234 fr. 1 i 16, and γενο[μένης] (?) present at 5234 fr. 1 i 1, but omitted at 5233 i 20. There seems also to be some inconsistency between the two in the use of the singular and plural of first-person verbs. 5233 i 6 preserves a plural (εἴρηκαμεν). 5234 fr. 1 i 2 has a singular (δεδήλωκα), but to judge by the space available, 5233 i 21-2 had the plural at this point ([δ]εδηλώ[καμεν]). There is a natural sense break here, but the possibility that the lacuna contained the singular form accompanied by blank space can be ruled out, as no comparable spaces of this length are used in the remains of this copy (cf. i 2) and the plural form is used elsewhere. 5234 uses iota adscript consistently, 5233 only haphazardly (cf. introd.). A blank space is found at the same point in the text at 5233 i 22 and 5234 fr. 1 i 2.

5233 is the more instructive in respect of the form, structure, and theoretical background of the work. The best preserved section begins at i 22, dealing with the treatment of lethargy,

and continues beyond the point at which intelligible text ends in both papyri. Preceding this therapeutic section is a passage that refers to the pulse (5233 i 16). This section probably dealt with the signs of lethargy, in accordance with the sequence of topics found in surviving treatises on acute diseases (cf. e.g. Anonymus Parisinus; Cael. Aur. *Cel. Pass.*). The text of 5233 fr. 1 i (i 1–13) comes from the top of the same column, and similarly preserves part of a therapeutic section. This clearly belongs to a discussion of the disease that preceded in the treatise. In view of the consistent ordering in comparable treatises on or lists of acute diseases in the Roman period, we would expect that this disease was phrenitis, an expectation confirmed by the reference to a previous discussion of the therapy for phrenitics at ii 1 (= 5234 fr. 1 i 10–11), and by the reference to παρακοπή (i 3), a term that denotes a delusional episode particularly familiar as a symptom of phrenitis (cf. 5233 i 3 n.). This therapeutic material seems to continue beyond the surviving portions of 5233 fr. 1 i, so that the transition from the chapter on phrenitis to that on lethargy must have occurred in the lost portion of column i between fr. 1 and 2. Furthermore, i 6–9 seem to refer to a preceding discussion of the treatment of certain forms of fever (see n. ad loc., as well as 5234 fr. 2). The subject matter of this treatise may then not have been strictly confined to acute diseases, although fevers themselves are intimately connected with acute diseases in ancient nosology.

There are several indications that the treatise was written by a Methodist physician. At 5233 i 5 we have a mention of 'the first *diatritus*'. The *diatritus*, referring to the recurring third day of an illness, represents a therapeutic principle that determined the timing of a range of dietetic remedies (see D. Leith, *CQ* 58 (2008) 581–600). It was developed by the Methodist Thesalus of Tralles (fl. 54–68), thus providing a *terminus post quem* for this treatise, and was fundamental to subsequent Methodist therapeutics, as attested in the works of Soranus and Caelius Aurelianus as well as by Galen's anti-Methodist polemics. On the other hand, we have evidence of the use of the *diatritus* by non-Methodists, in particular in the Anonymus Parisinus (Leith, op. cit. 596–9), so that the reference here cannot by itself demonstrate Methodist authorship.

Additional indications of the Methodist background of this work are identifiable in its patterns of treatment for lethargy. Certain features stand out for their alignment with Methodist therapies and corresponding disagreement with extant non-Methodist traditions. In particular, at 5233 i 25–8 = 5234 fr. 1 i 5–7, it is stated that the patient should be roused 'without irritation' (χωρίς παραγμῶν). A range of invasive measures to wake the patient from comas or catatonic episodes (καταφοραί) in lethargy are consistently prescribed by medical writers of the Roman period. Anon. Paris. 2.3.2, 4, 7–8 (14.4–11, 15–18, 16.14–18.2 Garofalo) recommends holding the patients' toes, bending their legs and pulling the hair growing on them, applying mustard rubefacients to the groin, mustard and castor to the nostrils, ptarmics generally, and finally blowing mustard and vinegar up the nostrils. Aret. 5.2.1 (CMG II 98.11–12) advises talking to lethargics, tickling them, squeezing their feet, pulling their hair, scratching them, and shouting in their ears. Aët. 6.3 (CMG VIII.2 129.16–22), drawing on the work of Archigenes and Posidonius, prescribes rubbing of the feet and hands, smelling drugs, fumigations, and ptarmics. Caelius Aurelianus also tells us that Diocles of Carystus (fr. 79 van der Eijk)

recommended sharp potions, constant rubbing, and ptarmics to rouse the lethargic (*Cel. Pass.* 2.7.33 (CML VI.1 148.27–150.8)), that Asclepiades sought constantly to wake the patient with ptarmics and smelling drugs as well as plasters of mustard and vinegar applied to the head (ibid. 2.9.37–8 (CML VI.1 152.15–30)), and that Heraclides of Tarentum also used ptarmics and smelling drugs for the same purpose (ibid. 2.9.54 (CML VI.1 162.23–7) = Heraclid. F 48.13–17 Guardasole); cf. also Cels. 3.20.1–2, 4 (CML I 129.4–9, 129.23–130.1).

It is only in the treatise on acute diseases written by the Methodist Caelius Aurelianus that a comparable concern to moderate the physician's methods of rousing the lethargic is attested. *Cel. Pass.* 2.6.26 (CML VI.1 144.29–146.2) recommends that the patient be woken gently and periodically by calling out his name (*per intervalla leviter excitari suo nomine exclamatum*), adding that rousing the patient 'by continually tickling, squeezing and pricking him does nothing but aggravate the state of constriction because of the disturbance brought on by the commotion' (cf. also ibid. 2.7.33, 2.9.38–40 (CML VI.1 148.27–150.8, 154.1–21)). The state of stricture referred to is one of the common conditions central to Methodist pathology, and Caelius' justification for his moderation is derived directly from Methodist principles. The Methodists thus apparently saw themselves as treading a fine line between aggravating the patient, with its concomitant risk of exacerbating the underlying condition of stricture which characterized lethargy, and allowing the dangerous comatose states to continue. Practitioners of other doctrinal backgrounds, not acknowledging the relevance of such a condition of stricture, were accordingly not constrained in their eagerness to rouse the lethargic. The unique agreement of the papyrus text in seeking to restrict the means of rousing lethargics suggests that it was likewise based on Methodist principles.¹

There are also a number of less distinctively Methodist, though no less striking, parallels between the therapeutic recommendations in the new text and in Caelius Aurelianus' treatment of lethargy (cf. 5233 i 22ff., ii 5–8 nn.). The clear differences between them, however, show that the new text does not belong to Soranus' *On Acute Diseases*, which was Caelius' direct source.² On the other hand, these various similarities suggest that there was some relationship between Soranus' work and the papyrus treatise. In the therapeutic sections, it is Caelius' practice, and it was therefore probably also Soranus', to cite predecessors by name only

¹ Celsus (3.20.2–3 (CML I 129.9–22)) discusses the view that it is injurious to continue rousing the patient after the attack; but there is no question that the patient is to be roused energetically during the comatose periods, contrary to the Methodists' approach.

² The precise nature of Caelius' dependence on Soranus' *On Acute Diseases* and *On Chronic Diseases*, and the extent to which this may have varied between the different books or the different parts of books (e.g. in his prefaces), remain rather unclear. His manipulation of Soranus' Greek certainly went beyond mechanical translation: this is clear if only from the fact that he repeatedly refers to Soranus by name (though never in *Cel. Pass.* 1). K.-D. Fischer, in P. Mudry (ed.), *Le Traité des Maladies aiguës et des Maladies chroniques de Caelius Aurelianus* (1999) 141–76, demonstrates on the basis of an independent Latin translation of a fragment of Soranus' *On Chronic Diseases* that Caelius abridges and reworks his source text to a degree. Caelius refers to his own activity as 'latinizing' Soranus' books (*latinizare*, *Cel. Pass.* 2.1.8, 2.10.65 (CML VI.1 134.23, 170.29)), a term which need not of course refer to direct translation. For a judicious overview, with references to earlier literature, cf. also P. J. van der Eijk, in id. (ed.), *Ancient Histories of Medicine* (1999) 415–24.

when pointing out their mistakes in treatment. Caelius very seldom describes the therapies of earlier doctors in order to commend them, and we can assume that some of those of which he approved would have been subsumed under his own recommendations without acknowledgement. In view of its Methodist authorship, and given the precise parallels in their therapeutic recommendations, I suggest that Soranus is likely to have known the work preserved in these papyri. One hypothesis is that they preserve fragments of Thessalus' treatise *On Regimen*. This work dealt with acute diseases in book 1 and chronic diseases in book 2, Soranus knew it well, and it certainly made use of the *diatritus*, of which Thessalus himself was the inventor. The circulation of individual works by Thessalus in Egypt is not confirmed until the third century (P. Vars. 5 v., P. Horak 2; see 5235 fr. 2 → 1 n.), but a mention of the *diatritus* in MP³ 2373.01 fr. A ii 43-4 (ed. I. Andorlini, in ead. (ed.), 'Specimina' per il Corpus dei Papiri Greci di Medicina (1997) 161), assigned to the late first or early second century, demonstrates at least the influence of his doctrine in Egypt by this date (cf. also LXXIV 4971 introd.). There is, however, no firm, positive evidence to support the attribution, and this work on acute diseases could equally have been written by another Methodist, though we hear of no such works after Thessalus besides those of Soranus and Caelius Aurelianus (cf. also 5233 i 6-9 n.). Given the second-century date of the earlier papyrus, and since Soranus' *floruit* can be located in the reigns of Trajan and Hadrian (*Suda* C 851 (iv 407.20-22 Adler)), it is also conceivable that the suggested influence was in the other direction. (The *Suda* entry states that Soranus worked in Alexandria; a fragment of Soranus' *Gynaecia* is preserved in PSI II 117 (MP³ 1483).)

A further comparandum is provided by the third-century medical fragment P. Golenischeff (MP³ 2347), which seems to preserve a fragment from the end of a book on acute diseases, and which likewise makes reference to the *diatritus* (cf. GMP II 15). P. Mil. Vogl. I 15 + 5235 also preserves a text on acute and chronic diseases, and mentions Thessalus and the Methodists specifically.

D. LEITH

5233. ON ACUTE DISEASES

101/66(a)

Fr. 1 9.6 × 9.6 cm

Second/third century
Plate IV

Four fragments containing remains of at least two columns, written against the fibres on the back of a tax roll, of which the text runs in the same direction. Fr. 1 preserves the upper margins of cols. i and ii and their intercolumnium; fr. 2 the lower margins of cols. i and ii and their intercolumnium; fr. 3 the upper and right-hand margins of col. ii. Fr. 4 remains unplaced, but the left margin survives, and, to judge from the remains on the front, it is more likely to belong to the lost portion of col. ii between fr. 1 and 2 than to col. i. There is a gap between fr. 1 and 2; a column will thus have contained more than 31 lines and been more than 14 cm tall. The upper and lower margins are intact and substantial, extending to 3.8 and 4 cm respec-

tively. The last line of col. i is c. 7 cm wide, and the intercolumnium is about 1-1.5 cm wide near the top. Six lines from the foot of col. ii, the scribe apparently felt that the column was encroaching too far into the intercolumnium, and the remaining lines stand on an alignment slightly further to the right. In the lower part of col. i, the scribe seems deliberately to have avoided an area in which a narrow strip of fibres has been partially dislodged, indicating that there was some damage to the papyrus already before it was reused. There are also places in which another layer of papyrus has stuck to the surface, leaving stray traces of ink, especially in the upper part of col. i.

The text is written in an informal hand, leaning to the right, small and well-spaced, if somewhat untidy. The hand is generally bilinear, with ρ extending below the notional line, ϕ and ψ above and below. a has a triangular loop, μ is deep and curved, v is Y-shaped, and ω broad, often rising only slightly in the middle. The cap of c is greatly extended at line end. The hand may be assigned most probably to the later second century, but an early third century dating is possible. Comparable are VI 852 (*GMAW*² 31), assigned to the late second or early third century, and the more angular hand responsible for LII 3676 and LIII 3710, among other bookrolls, also assigned to the late second or early third century (Johnson's scribe #A5, *Bookrolls* 20-21).

The text is punctuated by paragraphus below i 11, 22, ii 9 (possibly forked), and 21. Blank spaces (i 2, 22) and high dots (i 4, 6? (see n.), 19) are used within the text to separate sense units, the former perhaps to mark stronger sense breaks. The blank space at i 22 (accompanied by paragraphus) corresponds to a similar space at the corresponding point in the text in 5234 fr. 1 i 2.

In the left-hand margin next to, and slightly above, ii 13, there is a sign resembling a small γ , with a short horizontal line below and to the right of it. The horizontal may be a paragraphus, though it is very close to the level of the crossbar of π at the beginning of the line. A stichometric letter, marking the 300th *stichos* of the treatise, is perhaps a possibility, but without more context for this sign its function remains obscure.

Wedge-shaped line fillers are found at i 3, 8, 19, and 29, and expunction dots at i 2, 4, and 8. The ink of the expunction dots is not distinguishable from that of the main text. The expunction dot over ϵ in $\delta\epsilon$ at i 4 indicates elision. Elision is also used at i 19, the only other instance of an elidable vowel; apostrophe is not used in either case. There is a supralinear correction at i 27. Iota adscript is used sporadically, certainly at i 23 $\rho\acute{\iota}\kappa\omega\iota$ and perhaps also at i 5 $\delta\iota\alpha\tau\rho\acute{\iota}\tau\omega\iota$ (cf. n.); it is omitted much more often, at i 2, 5, 23, 24, and probably ii 9. The scribe's erroneous addition of ι in $\beta\sigma\eta\theta\acute{\iota}\{\iota\}\mu\alpha\tau\alpha$ at ii 4 suggests that he is uncertain as to when it is needed. Confusions of $\bar{\iota}$ and $\epsilon\iota$ are found at i 23, 24, and 25. $\acute{\kappa}$ is written for $\kappa(\alpha\acute{\iota})$ at i 23, apparently to save space at line end, since $\kappa\alpha\acute{\iota}$ is elsewhere written out in full. An unusual sign after a in $\epsilon\alpha\nu$ at i 25, resembling a curved '7', is perhaps meant as a circumflex, to indicate that the infinitive $\acute{\epsilon}\alpha\nu$ is intended.

In the articulated transcription, the parts present in 5234 are placed between upper half-brackets.

Col. i (fr. 1 (top) + 2 (bottom))

]οικενυδρομελιτη δρε
]αιω ενδιδου . . . δετης
]αρακοπησκ . . . την>
]πιτιθεναι τ . . . φηνδέεν
 5]ηπρωτηδιατ προς
]ερειωποια αμεν
]πιτετω πυρες
]οντωνκαιεπιτ . . . αι>
]πιτωνρ δε
 10] αυτη]
] ης α] c
] ακ υ]
]]

gap

15]]
] τα τ τα .
] εικαιτατω σφυ
]υδνατο . . . υνδια
] τουεπιτηδειον
] ευ ειν αλλε >
 20] αφυσιω ερμασι
] πονηδ . . .] εδηλω
] τουσδ . . .] ηθαργ[
] ο] κωιφωτινωκ
] υκ] ωκατα νοντας
 25] α] εικαταφερεςθαμει
] αμον νεκδια ειμμ
] νδειεγειρονταςχωρις
] σ αραγμουτοδεμεγεθος
] απολαβουσεστησεπι>
 30] σημασιασεπιβρεχειν
] τηνκεφαληνσυνεχωσ

Col. ii (fr. 1 + 3 (top) + 2 (bottom))

οικα[.] .
 χομε[.] ον
 των[.] πα
 ραλα[.] ηι
 5 ματα[.] αι
 ματ[.] ιωσ
 χρη[.] ισκα
 ταπ[.] δε
 τηπ[.] πιτου
 10 των[.] ινκ[
]
]

gap

15]]
] τα τ τα .
] εικαιτατω σφυ
] υδνατο . . . υνδια
] τουεπιτηδειον
] ευ ειν αλλε >
 20] αφυσιω ερμασι
] πονηδ . . .] εδηλω
] τουσδ . . .] ηθαργ[
] ο] κωιφωτινωκ
] υκ] ωκατα νοντας
 25] α] εικαταφερεςθαμει
] αμον νεκδια ειμμ
] νδειεγειρονταςχωρις
] σ αραγμουτοδεμεγεθος
] απολαβουσεστησεπι>
 30] σημασιασεπιβρεχειν
] τηνκεφαληνσυνεχωσ

Col. i (fr. 1 (top) + 2 (bottom))

]οις εν υδρομελιτι η υδρε-
 λ]αιω εν[δι]δουσης δε της
 π]αρακοπης κ . . . την
 ε]πιτιθεναι, τροφην δ' [ε] εν
 5 τ]η πρώτη διατρίτωι προσ-
 φ]έρειν οποιαν ειρήκαμεν
 ε]πί τε των ως πυρες-
 σ]όντων [και επί των] και
 ε]πί των ροωδωδς, από δε
 10 τ]αύτης]
 ης α] c
] ακ υ]
]

gap

15]]
] τα τ τα .
] ει και τα των σφυ-
 γμων. ο]υ δυνατον ουν δια
] τον επιτηδειον
] ευρειν, αλλ' εκ
 20 της παρ]α φύσιν θερμασι-
 ας δ' εν τρώ]πον η' δη [δ]εδηλώ-
 κα' μεν.] του' σ δ[ε] λ]ηθαργ[ι-
 κ]ου[σ] ε]ν οϊκωι φωτ'εινω κ(αι)
 ε]υκρ[α] τω κατακλίν'οντας
 25 ε]αν [δ]ει καταφερεςθαι, μι-
 κ]ρά μόνον εκ διαλειμμά-
 τ]ων δ' ι' [ει]εγειροντας χωρις
 σ]παραγμου, τδ' δε μέγεθος
] απολαβούσης της έπι-
 30 σημασία' σ επιβρέχειν
 την κε'φαλήν συν'εχωσ

Col. ii (fr. 1 + 3 (top) + 2 (bottom))

οις κα[ι] τους φρε'νιτικούς.] ρ-
 χομέ[νων] δ' ε' και'] όν-
] των [των παθών τ] πα-
 ραλα[μ' βάνειν δεί βοη]θή[ι]-
 5 μα'τα [και τη] τοπικη] το]υ αι-
 ματ[ος] αφαιρέσει δ' μο]ίως
 χρής[θαι και τοις' . . .] οις κα-
 τ'απλ[άσσειν, πλ' ε' ίον] δ' ε'
] τη] π[.] εον] επί τ' ού-
 10] των [μέν'] ινκ[
]
]

gap

15]]
] τα τ τα .
] ει και τα των σφυ-
 γμων. ο]υ δυνατον ουν δια
] τον επιτηδειον
] ευρειν, αλλ' εκ
 20 της παρ]α φύσιν θερμασι-
 ας δ' εν τρώ]πον η' δη [δ]εδηλώ-
 κα' μεν.] του' σ δ[ε] λ]ηθαργ[ι-
 κ]ου[σ] ε]ν οϊκωι φωτ'εινω κ(αι)
 ε]υκρ[α] τω κατακλίν'οντας
 25 ε]αν [δ]ει καταφερεςθαι, μι-
 κ]ρά μόνον εκ διαλειμμά-
 τ]ων δ' ι' [ει]εγειροντας χωρις
 σ]παραγμου, τδ' δε μέγεθος
] απολαβούσης της έπι-
 30 σημασία' σ επιβρέχειν
 την κε'φαλήν συν'εχωσ

Col. i

1 ., faint trace of vertical 2 . . . , papyrus badly abraded, traces indeterminate 3 . . . , indeterminate traces 4 . . . , fibres have come loose, but a small loop is visible, followed by a round letter 5 , traces largely indeterminate, but of the penultimate letter, a vertical sweeping upwards survives, as of the final stroke of ν or ω 6 , traces indistinct, but there are apparently the upper parts of two verticals in the middle of the damaged area 7 , papyrus badly abraded; of second letter, back and upper part of arc of $\epsilon\theta\omicron\varsigma$ 8 τ ., indistinct traces α , indistinct traces 9 , fibres badly broken and abraded, but two diagonals forming an apex high in the line are visible of the antepenultimate letter, followed by the feet of two verticals 10] ., trace at mid-height . . . [, back of arc of round letter; indeterminate trace] . . . , fibres badly broken and abraded 11] ., trace at mid-height ϵ ., indistinct traces . . . [, indistinct traces] . . . , fibres badly damaged and abraded 12] ., trace of vertical κ ., indistinct traces . . . [, indistinct traces] . . . , indistinct traces 13] . [, two diagonals meeting at top (λ ?); indistinct traces 14] . [, indistinct traces 15] ., end of diagonal descending from left to right τ . . . , short vertical with end of diagonal apparently descending from its top; trace high in line; obliques of α or λ ?; apparent trace of horizontal high in line; lower part of vertical; after τ , indistinct traces α ., foot of diagonal rising from left to right; indistinct traces 16] ., end of horizontal at mid-height ω ., trace of diagonal descending from left to right 17 . . . , faint trace of diagonal descending from left to right; back of arc of round letter 18] ., tip of horizontal or shallow, rising diagonal very high in line 19 ν ., indeterminate traces of narrow letter ϵ ., vertical with traces high in line to right 20 ., indeterminate traces at break in papyrus 21] ., single vertical survives 23] ., tiny dot high in line] . ., vertical; indistinct trace 24] ., tiny trace above mid-height , letter forms seriously obscured by horizontal break in papyrus; of first letter, foot of vertical with small oblique low in line 25 α . [, indistinct trace at break high in line; a slightly convex horizontal stroke above the line which turns back on itself as it sweeps into a diagonal descending from right to left, like a large 7, with equal sides, drawn in one fluid movement . . . , a trace of ink beyond the right margin, perhaps casual 26] ., part of vertical visible at mid-height ν ., indistinct trace at mid-height α ., most resembles lower parts of obliques of λ , but α perhaps not ruled out μ ., indistinct trace, followed by oblique sweeping down from left to right and ending almost horizontal 27] ., indistinct trace 28 ϵ ., feet of two verticals

Col. ii

1] ., faint trace obscured by piece of papyrus stuck to surface 2] ., vertical stroke at break 3] ., indistinct trace at break 4] ., indistinct trace 5] ., vertical extending below notional lower line, with small stroke projecting upwards and to the right from its top, as of ν or perhaps ρ 7] . [, very short vertical or back of curve] ., upper and right part of round letter 8] . [, diagonal rising from low left to right ($\alpha\lambda$)] ., vertical (ν possible) 9] ., two blobs of ink high in line, one above the other 10] ., downward tending stroke ending at mid-height, consistent with ϵ . [, traces obscured by loosened fibres 11 . . . [, fibres loosened and badly damaged 12] . [, indeterminate traces 15] . [, loop most consistent with that of α or δ 16] . [, short vertical or back of round letter 17] . [, vertical with top missing 18] . [, back of round letter 20] . [, faint trace at break at mid-height 22] . [, vertical with top missing 24] . [, spot of ink just below mid-height, apparently tip of gently rising diagonal 26] . [, diagonal rising from low left to right ($\alpha\lambda$)

Fr. 4

. . .
 . . . [.
 . . . [.
 $\epsilon\iota$ [.
 $\tau\alpha$ [.
 5 $\pi\tau$ [.
 α . [.
 $\tau\eta$ [.
 . [.
 ϵ . [.

1] . [, indistinct traces 2] . [, of first letter, perhaps lower left corner of δ ; of second, indistinct trace 3] . [, indistinct trace 6] . [, vertical with damaged trace apparently projecting from mid-height, most resembling κ 8] . [, back of round letter with flattened top ($\epsilon\epsilon$) 9] . [, indistinct trace

'... in hydromel or water and olive oil. When the delusion has subsided, (it is necessary) to apply a cerate (?), to prescribe food in the first *diatritus* of the sort we have mentioned both in the case of those with ... fever and in the case of those with fever characterized by flux, but from this day ... pulses. Therefore it is not possible to find the appropriate ... through ... , but from the unnatural heat in the manner we have already made clear. It is necessary to have lethargics lie down in a room that is bright and of moderate temperature, (to allow) them to slip into a catatonic state, rousing them only a little at intervals without irritation, but when the attack reaches its height, to foment the head continually with the same things as we apply to phrenitics. When the affections are beginning and (increasing (?)), one should apply (the same (?)) remedies and use localized bloodletting in a similar way and apply a plaster with (the same (ingredients) (?)), but with more ... in these cases (?) ...'

Col. i

1-2 The previous column may have described the prescription of a remedy such as a poultice or plaster, with ingredients to be boiled or soaked 'in hydromel or in water and olive oil', e.g. $\epsilon\phi\eta\psi\eta\mu\epsilon[\nu]\omicron\iota\varsigma$ or $\acute{\alpha}\pi\omicron\beta\epsilon\beta\pi\epsilon\gamma\mu\epsilon[\nu]\omicron\iota\varsigma$.

3 π] $\alpha\rho\alpha\kappa\omicron\pi\eta\varsigma$. A delusional episode particularly associated with attacks of phrenitis: cf. e.g. ps.-Gal. *Def. Med.* 234 (xix 412.16-17 K.) $\phi\rho\epsilon\nu\iota\tau\iota\varsigma$ $\acute{\epsilon}\sigma\tau\iota$ $\pi\alpha\rho\alpha\kappa\omicron\pi\eta$ $\delta\iota\alpha\nu\omicron\iota\alpha\varsigma$ $\mu\epsilon\tau\grave{\alpha}$ $\delta\zeta\acute{\epsilon}\omicron\varsigma$ $\pi\upsilon\rho\epsilon\tau\omicron\upsilon\delta$; ps.-Gal. *Int.* 13.9 (xiv 732.18-19 K. = 51.4-5 Petit) $\phi\rho\epsilon\nu\iota\tau\iota\varsigma$ $\mu\acute{\epsilon}\nu$ $\omicron\upsilon\delta\eta$ $\acute{\epsilon}\sigma\tau\iota\nu$ $\acute{\epsilon}\kappa\sigma\tau\alpha\iota\varsigma$ $\delta\iota\alpha\nu\omicron\iota\alpha\varsigma$ $\mu\epsilon\tau\grave{\alpha}$ $\pi\alpha\rho\alpha\kappa\omicron\pi\eta\varsigma$ $\epsilon\phi\omicron\delta\rho\acute{\alpha}\varsigma$. There are, for instance, seven attestations of the term in Anon. Paris., of which five are found in the chapter on phrenitis (1.1.3, 1.2.4, 1.3.5, 1.3.6, 1.3.11 (2.14-15; 4.9; 6.7, 16; 8.25 Garofalo)); the other two are in the chapters on colic and nephritis (15.2.3, 37.2 (102.17, 194.2 Garofalo)).

κ . . . $\tau\eta\nu$. The visible traces, and the direction to lay the object upon the patient (4 $\acute{\epsilon}$] $\pi\upsilon\tau\iota\theta\acute{\epsilon}\nu\alpha\iota$), suggest that $\kappa\eta\rho\omega\tau\acute{\eta}\nu$, a salve or cerate, should be restored. Anon. Paris. 1.3.7 (8.3 Garofalo), for example, prescribes poultices of bread soaked in a rose cerate ($\rho\omicron\delta\omicron\nu\eta$ - $\kappa\eta\rho\omega\tau\acute{\eta}$) for phrenitics; cf. also Aret. 5.1.21 (CMG II 96.12).

4-6 The prescription of food 'in the first *diatritus*' is one of the most commonly attested Methodist uses of the *diatritus* system: cf. e.g. Cael. Aur. *Cel. Pass.* 3.17.146 (CML VI.1 378.33) *abstinentia cibi usque ad primam diatriton*; *Tard. Pass.* 1.1.8 (CML VI.1 434.1-2) *cum abstinentia cibi usque ad primam diatritum*; Sor. *Gyn.* 3.28

(iii 28.80 BGM) ἀποχῆ τροφῆς ἕως διατρίτου; 4.37 (iv 27.108–9 BGM) καὶ ευστέλλειν ἄχρι διατρίτου καὶ τότε δίδοναι τροφήν ἀπλήν (for details, cf. D. Leith, *CQ* 58 (2008) 591–8). For Thessalus and the *diatrius* in the papyrus, cf. LXXIV 4971 and 5235 below.

5 διατρίτωι. The available space appears to indicate that iota adscript was written, and there is an indeterminate trace before π which does not seem to belong to ω.

6–9 These lines apparently refer back to an earlier discussion of the therapy of certain kinds of fever. Separate discussions of fever, however, are not attested in any of the surviving treatises on acute diseases (those of Aretaeus, Anon. Paris., and Caelius Aurelianus), though fever was recognized as invariably accompanying acute diseases such as phrenitis and lethargy. Perhaps this treatise was not restricted to acute diseases. The work in which Thessalus of Tralles set out his treatment of acute and chronic diseases was entitled *On Regimen*, with acute diseases dealt with in book 1, and chronic diseases in book 2. Such a title suggests a broader content than the treatment of acute and chronic diseases alone, and for the Methodists, fevers certainly fell under the category of affections to be treated by regimen. 5234 fr. 2 contains a discussion of the type of food to be given in certain fevers, and when to give it.

6 There is a spot of ink opposite this line at mid-height, resembling the high dots used as punctuation elsewhere (i 4, 19). The sentence must, however, continue on to the next lines, and we do not want a sense break at this point. It could be stray ink, or a mistake.

7 ως: perhaps e.g. *κυρεχῶς*, *σφοδρῶς*, *ἐκτικῶς*.

8 [καὶ ἐπὶ τῶν]: dittography resulting from homoeoteleuton.

9 ῥωδῶς. The counterpart (signalled by τε . . . καὶ) of the type of fever mentioned at 7: cf. e.g. Cass. *Probl.* 71.1 Garzya (p. 63) = 70 Ideler (i 164.14) διὰ τὴν ἐπὶ τῶν ῥωδῶς πυρεσσόντων κτλ.; ps.-Gal. *Def. Med.* 191 (xix 399.17–400.2 K.) on ῥωδῆς πυρετός; Dsc. 5.26 (iii 21.16 W.); 5238 32.

10 ταύτης. This will refer to the *diatrius*, i.e. the third day from the beginning of the illness, apparently introducing details of the subsequent therapy.

17–19 οὐδὲν at 17 seems to indicate some connection to the pulses mentioned at 16–17. The initial trace in 18 would be consistent with *v*: perhaps διὰ [τῶν] should be restored ('Therefore it is not possible to find the appropriate . . . by means of this (i.e. by checking the pulses?), but from the unnatural heat . . .'). Alternatively perhaps restore οὐτω] before εὐρεῖν at 19. No obvious candidates for the object in agreement with ἐπιτήδειον have suggested themselves. ('Perhaps τὸν ἐπιτήδειον [καίρον]' (WBH).)

20 Before θερμασ[ί]ας, 5234 fr. 1 i 1 has a word ending -μένης, here omitted: probably (γενομένης) should be supplied (cf. n.).

22ff. The author's prescriptions for the treatment of lethargy are closely paralleled in a number of respects at Cael. Aur. *Cel. Pass.* 2.6.26–7 (CML VI.1 144.29–146.6). The correspondences in regard to the avoidance of extreme measures to waken the patient, as well as the relation of these to Methodist doctrine, have been discussed in the introduction, but there are a number of further, less theory-specific, similarities. The passage is worth quoting at length:

et oportet iacere in loco lucido atque calido mediocriter, in accessione per intervalla leviter excitari suo nomine exclamatum. etenim iugiter titillatu vel impressione ac punctionibus hoc facere nihil aliud quam strictura <m> erit asperare ob inquietudinem quassationis. dehinc probabilior atque eligenda erit quassabili et noxia vigilantia quieti pressura. blando etiam articularum fricamento utendum est. est autem <in> accessione iugi fomento caput curandum, oleo dulci atque calido.

Caelius provides detailed comment justifying his therapeutic recommendations. Such comment is absent in the papyrus text. Otherwise there is a striking verbal resemblance in the remedies prescribed by each author, which are also found in the same order: for both writers, the patient should be made to lie down in a bright and moderately warm room; during the attacks (of catatonia), the patient should be roused non-invasively at intervals; and the head should be fomented continually using the same liquids as used for phrenitis (for Caelius' use of sweet, warm olive oil in fomentations for the head in phrenitis, see *Cel. Pass.* 1.9.67 (CML VI.1 60.11)). The

main difference is the absence of a reference to massaging the limbs, and the immediately following therapies in Caelius have no counterparts in the papyrus.

24 κατακλίνοντας. -κλειω- apparently written: cf. introd.

25 καταφέρεσθαι refers to the catatonic episodes (*καταφοραί*) which are one of the main symptoms of lethargy: cf. ps.-Gal. *Def. Med.* 235 (xix 413.5–6 K.) λήθαργός ἐστι καταφορὰ δυνειέγερτος μετ' ἀχροίας καὶ οἰδήματος φυώδους.

27 δ' ἰ [ε]γεύροντας. δει, the reading before correction, may have been influenced by [δ]εῖ at 25.

28 σπαραγμοῦ. I take this to characterize the irritating and invasive methods used by other physicians to rouse lethargics, but of which the author disapproves, such as pulling the hairs of the legs, scratching, tickling, applying ptarmics, etc. (see introd.). Cf. Sor. *Gyn.* 3.28.7 (iii 29.106 BGM) τῶ δι' ἐλλεβόρου λευκοῦ σπαραγμῶ; also Cael. Aur. *Tard. Pass.* 1.4.111 (CML VI.1 494.29–30), where it is rendered by *agitatio*.

Col. ii

2 δέ (restored): see 5234 fr. 1 i 11 n.

2–3] ὄν]των. Of the first letter, a short vertical, with perhaps a trace of a diagonal joined to its foot, as of *v*. This participle, following ἀρχομένων, should refer to a particular stage in the development of lethargy. This suggests perhaps ἀναβαίνοντων, describing the period of a disease's increase in intensity after its beginning: cf. ps.-Gal. *Int.* 13.7 (xiv 731.9–12 K. = 49.24–50.1 Petit) οἱ δὲ καιροὶ τῶν βοηθημάτων ἐν τε ὄλῳ τῶ νοσήματι καὶ ταῖς μερικαῖς ἐπισημασίαις εἰς τέσσαρες, ἀρχή, ἀνάβασις (V: ἐπίδοσις M), ἀκμή, παρακμή; *Opt. Sect.* (i 199.6–8 K.) οἱ καιροὶ τῶν νοσημάτων κρίνονται τῇ ποιᾷ κινήσει τοῦ αἵτου, καὶ ἔστιν ἀρχή, ἀνάβασις, ἀκμή καὶ παρακμή; also Gal. *Diff. Feb.* 2.17 (vii 400.16–17 K.), *Cris.* 1.17 (ix 623.1–4 K. = 114.25–115.3 Alexanderson). For the corresponding use of the participle, see e.g. Gal. *Comp. Med. Loc.* 6.9 (xii 993.5–7 K.) μὴ ἀρχομένου τοῦ πάθους προσθεῖν ἢ ἀναβαίνοντος ἢ καταβαίνοντος ἢ ἀκμάζοντος ἢ παρακμάζοντος. Verb forms of the alternative names used for the second, 'increasing' stage of an illness, viz. ἐπίδοσις and αὐξησις, do not fit the traces or the available space. ἐπιτείνοντων, however, might also be considered, in a similar sense: cf. e.g. Hp. *Præc.* 8 (ix 262.10–11 L. = CMG I.1 33.9) ἐπιτείνοντος τοῦ πάθους.

3 τ . . .] . . . For the suggested restoration of τὰ αὐτ]ὰ or ταύτ]α, see 5234 fr. 1 i 12–13 n.

4–5 βοηθηθ]ή(ι)ματα. The final letter of 4 is a clear ι (rather than, for example, a malformed line filler), but the corresponding text at 5234 fr. 1 i 13 certainly reads βοηθημα-. There is no trace of a deletion.

5–8 Similar therapeutic recommendations, including both withdrawal of blood and plasters, as well as references to treatments previously described for phrenitis, are found in the treatment for lethargy described at Cael. Aur. *Cel. Pass.* 2.6.29 (CML VI.1 146.30–32): *tunc sicut in phreniticis tondendum caput atque radendum et apposita cucurbita scarificandum et sanguisugis relevandum.*

6 ἀφαιρέσει seems an unavoidable supplement after τῇ τοπικῇ τοῦ αἵματος. 'Localized' will refer to the letting of blood from the area of the head, generally regarded as the affected part, or at least that affected most, in lethargy, as in phrenitis: cf., from a Methodist perspective, Cael. Aur. *Cel. Pass.* 2.6.26 (CML VI.1 144.22–7). The intended method of drawing blood could have involved simple venesection, or the use of cupping vessels or leeches: cf. e.g. the association of the corresponding Latin phrase *detractio sanguinis* with both cupping and leeches at Cael. Aur. *Cel. Pass.* 1.11.76 (CML VI.1 64.19–23).

7 τοῖς . . .]οις. This sequence will have specified the type of medicaments to be used in the plaster, but as at ii 3 = 5234 fr. 1 i 12–13, there may well have been a reference to previous recommendations: i.e. τοῖς αὐτ]οῖς?

9 π[: e.g. π[ἀλη. The use of π[ἀλη ἀλίτου, fine meal, for plasters is well attested (cf. e.g. Sor. *Gyn.* 1.50.3, 2.52.3, 3.41.7 (i 49.73, ii 61.13–14, iii 45.69 BGM)), and if a previous recommendation is being referred to here (cf. 7 n.), the normal specification, ἀλίτου or ἀλίτων, can perhaps be omitted. ('Then e.g. καὶ θετέων?') (WBH).)

The paragraphus is damaged on the left, but the traces suggest that it may have been forked.

5234. ON ACUTE DISEASES

17 2B.56/B(c) + 81 2B.85/36(d)

Fr. 1 8.5 × 13.5 cm

Second century
Plate V

Two fragments with text written across the fibres on the back of a documentary text running in the same direction. Fr. 1 preserves parts of two columns with intercolumnium (1 cm wide) and the upper margin of col. 1 (extending to 2.6 cm). Fr. 2 contains the remains of a single column broken on all sides. The text on the front of fr. 2 consists of the ends of lines, while that on the front of fr. 1 extends across the full width of the papyrus but only about a third of the way down.

The text is written in a medium-sized, rounded hand, leaning slightly to the right, with bilinearity breached regularly by ρ and τ (below) and φ (above and below). Small finials are often found on verticals, especially those of ν and τ. The loop of α is pointed, sometimes with its left oblique almost vertical. β is formed of an L with a curved stroke added for the small upper and broad lower loops; the base may project to the right. δ has a very broad base. The crossbars of ε and τ may be markedly extended. θ is oval and small, with its crossbar projecting slightly to either side. μ is rounded, and often looped at its second apex. The bowl of ν may be deep or shallow. ω is broad and rounded, with a high cusp in the middle. The hand may be compared with that of II 231 (Johnson, *Bookrolls* Pl. 1) + P. Laur. inv. III/284A, assigned to the late first or early second century, and the neater hand of XXVI 2441 (*GMAW*² 22), assigned to the second century. A date in the earlier second century seems most likely.

As in 5233, blank spaces are used to punctuate the text (fr. 1 i 2). Abbreviations are found, μ for μ(έν) at fr. 1 i 17 and κ for κ(αί) at fr. 1 i 18. Iota adscript is always written when needed in both fragments. ει is used at fr. 1 i 4 for the only instance of long ι, as it is in the corresponding place at 5233 i 24; cf. also fr. 2.20 n.

Comparison with the restored text of fr. 1 suggests that approximately eight letters are lost in each line of fr. 2, but no obvious restorations have suggested themselves at any point. The text seems to be concerned in the main with dietetic therapy, which could certainly be dealt with in the text to which fr. 1 belongs: there are repeated mentions of food (fr. 2.16, 21), and remains of what must be descriptions of appropriate kinds of food to be administered (9–10). The single mention at 16 is the only indication of the pathological context, though this can tell us little by itself given that most forms of acute disease were accompanied by fever. Interestingly, however, there is a reference at 5233 i 4–9 to a previous section of the treatise describing a form of food appropriate for certain kinds of fever ('(it is necessary) to prescribe food in the first *diatrius* of the sort we have mentioned both in the case of those with ... fever and in the case of those with fever characterized by flux'). There are no specific parallels here, and it is difficult to regard this as more than coincidental, but it remains a possibility that fr. 2 derives from an earlier part of the treatise which dealt with fevers rather than with acute diseases (see also 5233 i 6–9 n.).

In the articulated transcription, the parts present in 5233 are placed between upper half-brackets.

Fr. 1 col. 1

	]μένης ερμασίας [	]μένης ἑρμασίας δ[ν
	] ηδεδήλωκ του[	τροδ'πον ἦ]δη δεδήλωκα. 'του[ε
	]ι ουσενοικωφωτ[	δ'ε λ'ηθαργ'ικ'ου'ε ε'ν ο'κωι φωτ[ει-
	]α ωικ τακλειν[	νωι και' ε'υκρ']ά'τωι κατακλίν[ον-
5	]εικαταφερεςθαιμ[	τας ε'αν' δ]ε'ει καταφέρεςθαι, μ[ι'-
	]εκδιαλειμματων ι	κ'ρά μόνον] εκ διαλειμμά'των δι-
	]χωρισπαρα μου ο	εγείροντας] χωρίς σπαραγμού, τδ
	]απολαβουσητη .	δε μέγεθος] απολαβούσης τής ε-
	]σεπιβρεχειντην []ε	πισημασία]ε επιβρέχειν τήν [κ]ε-
10	]εχωσοικαιτουςφ []ε[	φαλήν συν]εχώς ο'ς κα'ι τους φ[ρ]ε-
	] .χομενων []εκ . [	νιτικούς.] ε'ρχομέ'νων [δ]ε και
	]ωντωνπαθωντ . [	.....'όν]των' τών παθών τα [
	]βανεινδειβοθη μα	.....' παραλα'μ]βάνειν δε'ι βοθη'θήμα-
	]οπικηιτουα []ματο	τα' και τήν] τοπικη'ι το'υ α[ι]μα'τος
15	]μοιω χρ . θ . []καιτο []ε	αφαιρέσει δ]μο'ίως χρῆς'θα[ι] και το[ι]ε
	]πλα .σεινπ [] .ονιτ .	.....'οικ κατ]απλ'άσσειν πλ[ε]ζον'ι τήν
	]εον .πιτ [] .ωνμ	π' .....]εον 'επι τ[ού]των' μ(έν)
	] .κπ [] .εβ [] .τω [ ]	] .κ(αί) π [] .εβ [] .τω []
	]τον [] . [] .κλυεμ [ ]	]τον [] . [] .κλυεμ []
20	] . [ ] .τοι [] .φερειν [ ]	] . [ ] .τοι [] .φέρειν []
	] .ρο [ ]	] .ρο []
] . []] . []
] . []] . []

1 c ., damaged traces high in line of upper arc with horizontal just below, as of ε or θ μ, the form of μ is clear enough, but considerably compressed laterally, as if corrected from an original λ [back of round letter 2] ., right tip of horizontal low in line ., obliques of α or λ 3 ., trace of upright on dislodged fibre, otherwise indeterminate 4 ., right-hand part of long horizontal high in line, touching ω, consistent with τ κ ., indeterminate traces around hole 6 ., curving diagonal descending from left to right, perhaps with trace of base of δ 7 a ., foot of vertical at left, with end of horizontal high in line at right touching subsequent μ ν ., indeterminate trace high in line 8 ., back arc of round letter; end of horizontal at mid-height π] ., tiny trace at mid-height; trace high in line [small trace low in line (foot of vertical?), then oblique, as of α or λ, touching vertical just below mid-height 12] ., only vertical remains, extending slightly below lower extremes of subsequent ων [part of diagonal descending from left to right at mid-height; faint traces obscured by stray fibres 13 ., remains of two verticals either side of lost, narrow strip of papyrus 14] ., right tip of horizontal touching ο at top (γτ) ο ., right tip of indeterminate stroke low in line 15 ω ., upper left part of round letter (no trace of midstroke of ε) ρ .,

vertical with stroke beginning at mid-height ($\eta\kappa$); indeterminate traces at notional lower line [, oblique rising from low in line with small trace of descending oblique at top ($\alpha\lambda$) 16] , π , end of diagonal descending from left to right a , indeterminate trace high in line π , [diagonal rising from low in line with small trace of descending oblique at top ($\alpha\lambda$)] , σ , indeterminate traces at break τ , , vertical with horizontal extending from mid-point, followed by vertical very close, as if very narrow η perhaps compressed at line end; vertical, as perhaps of ι , but there may be a stroke touching it at the top 17 ν , top and bottom portions of back of round letter on a narrow strip of papyrus] , indistinct traces high in line above break 18] , end of horizontal mid-height, most likely midstroke of ϵ β , [lower half of vertical] , indeterminate trace high in line 19] , [, indeterminate trace high in line; vertical with indistinct traces to right μ , [left-hand parts 20] , [, a vertical, then damaged traces

Fr. 1 col. ii

11	δ[	11	δ[
	[[
	β[		β[
15	]νειδ[	15	]νειδ[
	οσφ . [		ό σφυγ[μδς
	ματ[		ματ[
	πα [		πα [
	αι[		αι[
20	π [	20	υπ [

12 [, fibres frayed, obscuring traces 18 [, back of round letter 19 [, indeterminate trace low in line 20 , hooked trace high in line, as of ν or χ [, indeterminate trace high in line

Fr. 2

] . . . [] . [. . .] . [] . . . [] . [. . .] . [
] . . . [] . [. . .] . [] . . . [] . [. . .] . [
] . [] . [. . .] . [] . [] . [. . .] . [
	] . [ . . . ] . . . [ ] α . . . [		] . [ . . . ] νι [] α . . . [
5	] . . . κ βρ [] δυτερ[	5	] . . . και βρ [α] δυτερ[
	] . . . α ν μα [		] . . . α ν μα [
	] . . . οδ ερασ		] . . . οδ τερασ[
	] . . . μικροτερακα[		] . . . μικροτερα κα[
	] . . . ητεκαιποικ . [		] . . . η τε και ποικίλ[
10	] . . . εωδηςς ντωικ[	10	] . . . εωδηςς εν τωι κ[
	] . . . μηπαρ . . ορικ [		] . . . μη παρηγορικη[
	] υτ υχρον της [		] υτου χρόνου τής [
	] . . θηναιουδ νατα φ[		] . . δοθῆναι ού δύναται φ[
	] ε ι μασιακ καταλ[		] έπισημασία και καταλ[
15	] ρ κειμενη ενυποχον[	15	πα]ρακειμένη εν υποχον[δρί
	] εταιτουπυρετουτροφ[		] εται του πυρετου τροφ[
	] . . . ατος δικυμφερ[		] . . . ατος ωδι κυμφερ[
	] . [ ] . σεσιτοσαν [] . ε τε[		] . [ ] ήσει τοσανύ[τ]η εντε[
	] . [ ] . δοναιοςη [] . [] . c[		] . [ ] δι]δόναι έση [] . [] . c[
20	] . [ ] λ μματ ναδρ[	20	] . [ ] λ μμάτων άδρ[
	] . . [ ] καιροντη [] ροφ . [		] . . [ ] καιρον τή[ς τ]ροφή[ς [
	] . . . [ . . . ] ξ [ ] . [ ] . [ ] . [ ] . [		] . . . [ . . . ] ξ [] . [] . [] . [] . [
] . . . [. . .] . [] . . . [. . .] . [
] . [] . [] . [] . [
25	] . [ ] . [	25] . [] . [
] [] [
	] μ[		] μ[
	] ρ [		] ρ [
] [] [
30	] [	30] [

1-3 indeterminate traces 4] . . [, of second letter, trace high in line, following by end of diagonal to right at notional lower line level, joined to foot of vertical, as of angle of ν ; then upright 5 κ . .

indeterminate traces, then faint trace of short upright 6 α [, upright curving slightly to left in lower half; with top obscured, ν or λ, perhaps κ, among possibilities 9 [, foot of vertical, slanting slightly to left; top of diagonal rising steeply from left to right 10 ν, trace high in line close to subsequent ν 11], of first letter, small trace of descending diagonal mid-line; of second, diagonal descending from top left to bottom right, as of α, δ; of subsequent two letters, peaks of apparently narrow triangular letters, λ; of last letter, trace high in line ρ . . . , very small left-facing hook high in line; indeterminate traces 12] . ν τ . , specks; trace of upper curve of round letter faintly visible above hole in papyrus ν . . . , back of rounded letter; traces high in line [, upper half of descender at break 13] , specks of ink; then upper part of diagonal descending to right from high in the line; upper part of circular letter δ , small trace high in line on edge of large hole 14] ε . , remains of vertical, with stroke jutting to right from top ε . . . , a circular letter which may or may not be closed at right, ε or ο; high trace above hole . . . κ, indeterminate traces; foot of vertical, with small left-facing serif 15] ρ . , faint speck high in line, with another beneath and to right at notional lower line level To the right of η, on a displaced strip, a small supralinear trace suggesting the lower arc of a circle 17] , midline, trace of upward-facing curve; top of descender in upper half of line; right-hand side of left-facing circular stroke; two consecutive high peaks with damage below c . , two holes in papyrus leaving only two small specks high in line, belonging to one large letter, or two small ones 18] [, faint specks] . c, narrow, right-facing crescent, perhaps second upright of η] . , top of vertical high in line 19] [, indeterminate traces] [.] . , indeterminate trace; foot of descending stroke, with right-facing hook, as of e.g. ε 20] [, traces suggesting an upright λ , specks τ . , left side of circular letter survives at break, touching crossbar of τ 21] [.] . , damaged traces [, feet of two uprights, the first extending below the notional lower line; trace of stroke low in line curving to right 22] [, damaged traces, the fourth perhaps α [, specks] . . . [, thick top of upright; upper part of crescent, ε rather than c; top of upright] . [, faint trace high in line; descending diagonal, with trace of oblique at left below top, as of α, δ, λ 23] [, damaged traces, the fourth an upright] [, trace of shallow bowl 24] [.] [.] [, damaged traces 25] [.] [.] [, damaged traces 26] [, damaged trace 28 [, specks 30] [, specks

Fr. 1 col. i

1] μένης. This word is not written at 5233 i 20, but as the text given there makes good sense, it is unlikely that much has been omitted. The simplest hypothesis is that 5234 read ἐκ τῆς παρὰ φύσιν γενομένης θερμασίας, 'from the heat that comes about contrary to nature'. The omission of γενομένης does not of course affect the general sense. Cf. e.g. Gal. *MM* 13.4 (x 880.6-7 K.) διὰ θερμασίαν τινὰ παρὰ φύσιν ἐν αὐτῷ γενομένην; Alex. Trall. *Therap.* 10 (ii 461.10-11 P.) ἀπὸ τῆς παρὰ φύσιν γενομένης θερμασίας.

6-7 δὲ [εγείροντας]. For the restoration, which is a good fit for the space, see 5233 i 27 n.

11] δ]έ. This is clearly the second word of a new sentence, and [δ]έ rather than [τ]ε should probably be restored.

12 δύν]των. For the possible restoration ἀναβαινόν]των, see 5233 ii 2-3 n.

12-13 τα [] In the adjacent lines, the author repeatedly recommends remedies for the lethargic which had previously been prescribed for phrenitics (10-11, and 15 δ]μοίως). This and the small amount of space available suggest the restoration of τὰ α[ὐ]τά or ταὐ]τά, 'the same remedies', sc. as described earlier for phrenitics (the tiny high trace at the end of 12 could suit either α or υ).

16 τῆς corresponds to τῆ at the beginning of 5233 ii 9. There is no trace, however, of δέ in 5234, although this is written immediately before τῆ in 5233, at the end of ii 8. As far as I can see, this is the only indication, and a very weak one, that 5233 may be a copy independent of 5234.

17 For a possible supplement, see 5233 ii 9 n.

18 π[ρο]c(-)?

19] κλυςμ[: e.g. (-)κλύσμα or (-)κλυμός in some case (WBH).

Fr. 1 col. ii

16 ὁ σφυγ[μός. Given the mention of the pulse at 5233 i 16-17, although in the plural there, the suggested restoration seems likelier than a reference to the loins, σφύδε.

Fr. 2

7 αρμοδιωτερα οἱ δευτερα?

9 πολλή τε και ποικίλη, 'much and varied', qualifying τροφή?

10 κρεώδης ('meaty') is suggested by the context (descriptions of types of food to be prescribed).

12 τοῦ χρόνου οἱ τοῦ αὐτοῦ χρόνου.

15 ὑποχον[δρίω, ὑποχον[δρίοις.

17 'πόμετος' (WBH).

18 τοσαύτη. The dative singular τοσαύτη, with iota adscript, is also possible.

20 δ] [α]λε[ι]μάτων (cf. fr. 1 i 6 ἐκ διαλειμάτων) would appear to require more space between λ and the first μ, but the word may have been written with -ι- for -ει-.

ἀδρ]. Most likely a form of ἀδρός, 'thick, substantial', describing the type of sustenance that is to be given to the patient. It is opposed to ροφηματώδης, 'gruel-like', e.g., in Archig. ap. Aët. 12.1 (21.6-8 K.) ἡ δὲ διάτα ἐν τοῖς παροξυσμοῖς ροφηματώδης ἔστω και δλίγη, ἐν δὲ τοῖς διαλείμμασι ἀδρότερα και ἀναληπτικώτερα. Cf. also Sor. *Gym.* 2.22.3 (ii 33.30-31 BGM); Anon. Paris. 35.3.1 (190.7-8 Garofalo).

D. LEITH

5235. ON ACUTE AND CHRONIC DISEASES

115/113(a)

Fr. 1 2.1 × 3.8 cm

Early fourth century
Plate XIV

Two further fragments of the papyrus codex P. Mil. Vogl. I 15 (MP³ 2340), a medical treatise in question-and-answer format, devoted to the definition, cause, signs, and therapy of various acute and chronic diseases. I have argued for a reconstruction of the sections on causes in the Milan fragment that would give the codex an average of c. 34 letters per line and a written area about 11.5 cm wide (*ZPE* 189 (2014) 225-32, with photographs (226)).

The practised, angular hand is discussed by I. Andorlini, *Pap. Congr. XX* (1994) 412-13 with pl. 30, who assigns it to the early fourth century, comparing P. Herm. 4 and 5 (*GBEBP* 2a, *GMAW*² 70) of c. 317-23 and other fourth-century hands. A. F. Moretti, *AnPap* 7 (1995) 22, assigns it to the same period. D. Manetti and R. Luiselli compare the hand of P. Ryl. III 530 (commentary on Hp. *Aph.*), which they assign to the late third or early fourth century (CPF 1.2* 18 Hippocrates 24T, pp. 181-2). The ed. pr. had assigned the hand to the second century, G. Cavallo, in A. Blanchard (ed.), *Les Débuts du codex* (1989) 171, to the mid-third.

Only the left margin survives in fr. 1 ↓ and the right in fr. 1 →. *Diple obelismene* is employed once at line beginning, at fr. 1 ↓ 5, followed by a short blank space. The *diple obelismene* is used comparably six times in P. Mil. Vogl. 15, always within the text and signalling a new question-heading. The use of the *diple obelismene* within the text in this way is rare and associated especially with wide columns: besides the codices P. Ryl. 530 (CPF 1.2* 18 Hippocrates 24T, with comments on the use of the *diple* at 182), P. Iand. 83a (A. Wouters, *The Grammatical*

Papyri from Graeco-Roman Egypt (1979) no. 10), MPER NS I 34 (MP³ 149.2), and P. Ant. III 186 (CPF L.2* 14 Galen 2) fr. 2(b) 14, cf. the rolls PSI inv. 505 (c. 46 letters per line), edited by J. Landon and S. Matthaios, *ZPE* 154 (2005) 97–116, with remarks on the use of the *diple obelismene* at 99 and nn. 16 and 17, and IV 654 (c. 31 letters per line); cf. also the amulet P. Köln X 405. In such cases, it may have been considered wasteful, or less aesthetically pleasing, to begin a heading on a new line. Even in this instance in 5235, where the *diple obelismene* is used at the beginning of the line, the text begins only to its right rather than underneath it.

Attempts to place either fragment in relation to the other or to P. Mil. Vogl. 15 have proved fruitless (see fr. 1 ↓ 5 n.), and it is not clear how many leaves are represented.

The new fragments are most notable for the mention of the Methodist physician Thessalus of Tralles at fr. 2 → 1 (see n.).

Fr. 1 →		Fr. 1 ↓
	c. 27	οὐ μὺ [
	c. 27	ῥται η δια [
	c. 27	αχέτως
	c. 27	αι αὐτοῖς
5	c. 27	ων ἀμπε[-
λ	c. 26	ὀξυκρα[-
τ	c. 26	καὶ ταυτ [
		5
		τ[
		νεύρα τ[
		ενεργ[
		κυνο [

Fr. 2 →	Fr. 2 ↓
Θ]εσσαλ[	]ειν η π[
]εις τὸ αυ[	]θεμεν[
] . α . ρο . [	]ράζοντος [

Fr. 1 →
3 ἀχέτως, or a compound such as ἀκατ]αχέτως. To judge by its use in comparable medical literature, this may point to a section devoted to the signs of the disease under discussion, and in particular some form of unrestrained behaviour perhaps associated with a mental disorder: cf. e.g. Aret. 3.6.10 (CMG II 43.20, 23), on the signs of mania; Paul. Aeg. 3.6.1 (CMG IX.1 144.17), on the signs of phrenitis.

5–6 Mentions of the vine and vinegar mixed with water indicate that these lines formed part of a section on therapy. The therapeutic sections of P. Mil. Vogl. 15 → are found at 9–17 and 27–37.

Fr. 1 ↓

1 οὐ μὺ [Unless this is a reference to muscles, the mention of nerves at 4 below might suggest the spinal cord, e.g. νωτιαί[]οὐ μνε[λοῦ. Alternatively, if this line forms part of a section on therapy, the bone marrow of a certain animal may be referred to here, as e.g. ἐλαφε[]οὐ μνε[λοῦ, but there are some grounds for thinking that this section is unlikely to be concerned with the treatment of the disease, since material of this nature ought not to precede a discussion of its cause (see 4 n.).

3 τοῦ πά[θου?

4 νεύρα. In P. Mil. Vogl. 15, references to anatomical features and physiological phenomena are generally found only in the sections devoted to aetiology (→ 4–8, 20–25; ↓ 9–15; cf. esp. the reference to nerves in the *doxa* on the cause of apoplexy ascribed to Asclepiades at → 23), and this is most likely the subject matter of 4. In that case, in view of the sequence of topics in P. Mil. Vogl. 15, the following question at 5 may concern the signs, differentiae, or indeed treatment of the condition under discussion. Acute and chronic diseases thought to affect the nervous system directly include apoplexy, paralysis, phrenitis, lethargy, etc.

5 τ[ί. Some part of τίς introducing the new question-heading: cf. e.g. P. Mil. Vogl. 15 → 18 (τί ἐστ]ιν ἀποπληξία), 20 (τίς αἰτία ἀποπληξίας), 26 (τίς διαφέρει ἀποπληξία ...), ↓ 15 (τίνα [ε]ημεία ἐχιά[δος]). The question-headings whose beginnings are lost in a lacuna in P. Mil. Vogl. 15 ↓ are those at 7 (τί ἐστ]ιν ἐχιά[δος]) and 9 (τίς αἰτία ἐχ]ιάδος), but it is not physically possible so to place the fragment that τ[here gives the beginning of either of those questions: if it were placed at P. Mil. Vogl. 15 ↓ 9, there would only be room for about two letters between του πα[and τί ἐστ]ιν ἐχιά[δος]; two lines before, while if it were placed at P. Mil. Vogl. 15 ↓ 7, κυνο [two lines lower down would occupy the space where the beginning of τίς αἰτία ἐχ]ιάδος; should fall. In any case, as suggested, the mention of 'nerves' in the preceding line may indicate an aetiology, and the term seems ill-suited to the context of either P. Mil. Vogl. 15 ↓ 6 or 8. If νεύρα does indeed belong to a section on causes, then in view of the regularity of the sequence of topics in this and other medical catechisms on individual diseases (definition, cause, signs, treatment), a question on the definition or cause of the disease at fr. 1 ↓ 5 can be ruled out. Furthermore, the text on the other side at fr. 1 → 4–6 does not seem to correspond with what survives at P. Mil. Vogl. 15 → 8–12. These considerations strongly suggest that fr. 1 does not belong to the same leaf as the Milan fragment.

Fr. 2 →

1 Θ]εσσαλ[. There seems little doubt that we have here a mention of the Methodist physician Thessalus of Tralles (fl. 54–68). A reference to Thessalus the son of Hippocrates does not seem likely, in particular since there is no sign that he made any impact in the doxographical tradition of medicine: he does not feature in the Anonymus Londinensis or the *Placita* tradition, whereas for example Polybus (in the later tradition Hippocrates' pupil) is referred to in both. On the other hand, several features of the papyrus text point to the Methodist. In P. Mil. Vogl. 15, the aetiological sections are represented by short doxographies, in which the Methodists as a sect are invoked certainly at ↓ 14, and possibly also at → 7. In what survives, a privileged status appears to be bestowed on the authority of the physician Asclepiades of Bithynia (Π/Ι BC), whose theories were an important precursor of Methodism, and who taught its founder Themison of Laodicea. Furthermore, certain features of works on acute and chronic diseases, of which this papyrus furnishes another example, are associated by the fifth-century Methodist physician Caelius Aurelianus specifically with members of his own sect. He tells us, for example, that Themison was the first doctor to offer a separate, dedicated discussion (*principaliter*) of the treatment of chronic diseases (among which were counted the diseases sciatica and elephantiasis included in P. Mil. Vogl. 15), where previously Erasistratus and Asclepiades had discussed these variously in separate works (*Tard. Pass.* praef. 3 (CML VI.1 426.25–428.5)). Caelius also characterizes Themison as the only 'ancient' doctor to have described the treatment of elephantiasis, and Democritus as the only philosopher, if the book *On Elephantiasis* attributed to him is authentic (*Tard. Pass.* 4.1.4 (CML VI.1 776.17–19)). The chronological distinction between 'ancient' and 'more recent' doctors is notoriously difficult to pin down, however, and for Caelius the generation immediately following Themison's seems to have fallen into the latter category: thus at *Tard.*

Pass. 4.1.8–10 (CML VI.1 778.27–780.12), Caelius also describes the treatments which Themison's followers set down for elephantiasis. Thessalus of Tralles sits easily within such a context, and he can be connected with the subject matter of the papyrus by the fact that the two books of his treatise *On Regimen* were devoted to acute and chronic diseases respectively. The motivation for the citation here may be more difficult to determine. All doxographical material in P. Mil. Vogl. 15 is found in sections on the cause of the disease under discussion, but it is possible that he was cited here for his views on the signs or treatment of a disease.

A growing number of papyri provide evidence of Thessalus' varied impact in Roman Egypt. He is referred to by name in two other papyri: in a list of books at P. Vars. 5 v. 23, together with his Methodist predecessor Themison at 26b; and in P. Horak 2, a title tag with the inscription *Θεσσαλοῦ περὶ τοῦ φιλιατρειῶν τοῦ εὐχρήμονος ἀνδρός* ('Thessalus, *On Medical Interests Among the Elite*'). As the inventor of the therapeutic principle of the *diatrius*, his influence can be traced also in MP³ 2373.01 (ed. I. Andorlini, in ead. (ed.), 'Specimina' per il Corpus dei Papiri Greci di Medicina (1997) 153–168), P. Golenischeff (cf. GMP II 15), LXXIV 4971, and 5233. It has also been suggested that his particular views lie behind the Methodist definition of *κοωότης* preserved in LII 3654 fr. 8 (see n.).

2 Perhaps τὸ ἀν[τρό].

Fr. 2 ↓

2 A form of (-)τῖθημι perhaps suggests that this line comes from a section on therapy.

D. LEITH

5236. ON GANGRENE

5 1B.38/F(f)

2.4 × 6.3 cm

Second/third century
Plate I

Remains of the middle parts of twelve lines. There is a small scrap loosely attached to the bottom of the fragment with a few indeterminate traces, not transcribed below. The writing runs along the fibres, and the back is blank.

The hand is an example of the Severe Style, sloping to the right. The crossbar of ε is detached and slopes upwards; that of θ projects on both sides. The upper branch of κ has a downward-pointing hook at its tip. φ has a triangular loop, of which the right-hand side may be detached (5). Neighbouring letters often touch. Datable parallels include XLII 3005 (after 118/19) and LXIX 4736 (before 194); cf. in general L. Del Corso, *Aegyptus* 86 (2006) 81–106.

A supralinear ascending oblique is used in abbreviations for -ων, πρὸς, and καί, of which the first two are paralleled in P. Lond. Lit. 165 (Anon. Lond., MP³ 2339). The use of abbreviations may suggest that this is a scholar's copy.

The text seems to be concerned with gangrene (2), and specifically with its causes. It records the opinion of the physician Asclepiades of Bithynia (fl. c. 100 BC) on the aetiology of the condition under discussion. The wording is paralleled in the Asclepiadean aetiologies set out in P. Mil. Vogl. I 15 → 20–23 and ↓ 12–14 (cf. 5235 above). Caelius Aurelianus records a number of similar Asclepiadean disease definitions in his *On Acute Diseases* and *On Chronic Diseases*, likely drawn from Asclepiades' original works (cf. e.g. *Cel. Pass.* 1 praef. 6; 2.13.89; 3.17.139; 3.19.188 (CML VI.1 24.17–26.2, 188.3–5, 376.6–8, 402.14–17)). According to

Asclepiades' theory, almost all diseases can be attributed to an obstruction (ἐνστασις) of invisible corpuscles (ἄγκοι) in the imperceptible pores (πόροι) of the body. Different diseases and symptoms are produced by differences in the location of the obstruction and in the relative sizes of the corpuscles and pores involved (cf. J. T. Vallance, *The Lost Theory of Asclepiades of Bithynia* (1990) 93–122). Pores (9) will have been mentioned in a reference to the location of the obstruction that produces the relevant condition.

It was not previously known that Asclepiades discussed gangrene (if indeed this is still the subject matter of lines 7ff.), but the fact is unsurprising, since he wrote a treatise *On Wounds* (Cass. *Pr.* 41.3 Garzya (p. 55) = 40 Ideler (i 157.33–4)), from which this report may ultimately be derived. Gangrene was defined as a potentially fatal necrosis of the skin especially around a wound, marked by severe discolouration of the flesh (cf. e.g. ps.-Gal. *Def. Med.* 186 (xix 449.3–7 K.); Gal. *Tum. Pr. Nat.* 8, II (vii 720.14–721.6, 726.4–8 K.)).

]. . [] []
 γα]γγραινα []
 κ]ατ' ἰδίαν π(ρο)σφ[]
] τὸ πάθος ἐκ[]
 5 δι]αφόρ(ων) αἰτι(ῶν) []
] ου συνεκτ[ικουῦ
 Αε]κληπιάδης []
 τῶν λόγῳ θεωρ]ητ(ῶν) ἄγκω[ν
]ς πόροις []
 10]εἰπονταστ[]
]υ κ(αί) πνευ[μ
]ςιν φθρ[]

3 π̄ 5 αφορ'αίτι 8 ητ̄ 11 κ̄

'... gangrene ... separately ... the affection ... different causes ... cohesive ... Asclepiades ... the corpuscles intelligible to reason ... pores ... and pneuma ...'

1] . [] [. Feet only, the last perhaps the lower left-hand corner of α or λ.

2] [: perhaps the left-hand side and turn-up of ε or ς, e.g. ἐ[στ]ι in a definition.

3 κ]ατ' ἰδίαν may belong to a definition of the disease, preceding an account of its cause. WBH tentatively suggests that there may be a contrast between a passage addressed to a group and a passage addressed 'separately' to (e.g.) Philip.

π(ρο)σφ[: π(ρὸς) φ[or π(ρο)σφ[-, e.g. π(ρὸς)φ[ατ-, of a 'fresh' wound.

4–5] τὸ πάθος ἐκ[| δι]αφόρ(ων) αἰτι(ῶν) [. Cf. perhaps Alex. Trall. *Therap.* 12 (ii 501.9–10 P.) τὸ τῆς ποδάγρας πάθος ... ἐκ πολλῶν καὶ διαφόρων αἰτιῶν ἔχει τὴν κύστασιν.

6] ου: e.g.] τοῦ, αὐ] τ[ί]ου.

συνεκτ[ικου]. Cf. P. Mil. Vogl. I 15 → 20–21 τίς αἰτία ἀπο[πληξίας; κατ' Ἀσ]κληπιάδην συνεκτική ἐστ[ί]ν κτλ. *συνεκτικός* is probably not Asclepiades' own term: cf. *ZPE* 189 (2014) 229.

7 Ἀσ]κληπιάδης [. The last trace is the base of the lower arc of a circle, e.g. c.

8 τῶν λόγῳ θεωρητ[ῶν] ὄγκω[ν]. Asclepiades' ὄγκοι are regularly described as λόγῳ θεωρητοί in our sources (cf. e.g. S. E. *M.* 3.5; Gal. *MM* 2.4 (x 101.17 K.); Cael. *Aur. Cel. Pass.* 1.14.105 (CML VI.1 80.22–3)). The noun governing the genitive will have been ἐνστασις, the pathological 'blockage' or 'impaction' of the ὄγκοι that was central to Asclepiades' aetiology of disease (see introd.; cf. P. Mil. Vogl. 15 ↓ 13] λόγῳ θεωρητῶν ὄγκων ἐνστ[ασις]).

9] ε πόροις [: e.g. ἐν τοῖς τῆς σαρκὸς πόροις, ἐν τοῖς πόροις [κατὰ τὴν σάρκα, etc.

10] εἰπονταστ[: e.g.] εἰπόντα,] εἰπόντας.]η is not excluded, and a participle of σήπω would suit a discussion of gangrene or another form of necrosis, but it is unclear what would be causing the putrefaction.

11–12] υ κ(αὶ) πνευ[μ]]] σιω φορ[ρ]. Perhaps a reference to the matter that flows through the human body, e.g. ὑγροῦ κ(αὶ) πνεύ[ματος], then at 12 a reference to the impeded flow of such matter as a cause of gangrene, with ἡ κατὰ φύσιν φορά in some form. Cf. e.g. Gal. *Tum. Pr. Nat.* 8 (vii 720.18–721.3 K.) ἐπειδὴν γὰρ ἰσχυρῶς φραχθῆ ... τὰ τε στόματα τῶν ἀγγείων οἱ τε πόροι πάντες οἱ κατὰ τὸ δέρμα τῆς κατὰ φύσιν ἀποστερούμενοι διαπνοῆς, τὰ οὕτω κάμνοντα σώματα νεκροῦνται ῥαδίως; *MMG* 2.11 (xi 136.7–9 K.) τοῦ κατὰ τὸ πάχος μῦρον αἵματος ἐσφηνωμένου, δι' ὃ καὶ ἡ νέκρωσις γίνεται, μὴ δυναμένων τῶν ἀρτηριῶν ὑπὸ στενοχωρίας διαστελλεσθαι. But such an explanation is too generic to be attributed confidently to Asclepiades. These lines may describe an opposing view on the cause of gangrene. Otherwise, the point may be that the obstruction of the ὄγκοι is ultimately responsible for the impeded movement of the liquids and pneuma in the body. For bodily liquids and pneuma as composed of ὄγκοι, cf. e.g. S. E. *M.* 3.5 ὅτι πάντοθεν ὑγροῦ μέρη καὶ πνεύματος ἐκ λόγῳ θεωρητῶν ὄγκων συνήρῃσται; Cael. *Aur. Cel. Pass.* 1.15.124 (CML VI.1 90.33–92.2) sic etiam sanguis maiorum corpusculorum materia ... spiritum et fervorem, quae ut dicit parvorum sunt corpusculorum materiae.

Asclepiades is said to have held that light or *solubiles* fevers (distinguished from the *vehementes*) were due to a disturbance of pneuma and liquids in the body, rather than to the ἐνστασις or obstruction of the ὄγκοι (cf. Cael. *Aur. Cel. Pass.* 1 praef. 8, 1.14.107 (CML VI.1 26.15–18, 82.10–13)), but a reference to these conditions would not suit the context. (Vallance, *Lost Theory* 118, understands 'diseases' with *solubiles* in the second passage, but the contrast is between two kinds of fever, as in the first; cf. τὸν πρὸς τῇ ὑπεκλύσει πυρετῶν in the corresponding passage at Sor. *Gyn.* 3.4 (iii 5.81–2 BGM).)

D. LEITH

5237. MEDICAL TREATISE

45 5B.54/G(1)a

Fr. 1 27 × 21.5 cm

Second century
Plate VII

Two fragments preserving parts of five consecutive columns; the small fr. 2 is placed at col. v 16ff. on the basis of the fibres. The writing runs along the fibres, and the back is blank. There is a *kollesis* running through col. iii. The upper margin survives to a depth of 2.5 cm. The column width is c. 6.5 cm, and the intercolumnium is c. 0.9 cm wide at its narrowest. A line holds 18–23 letters; the average is c. 20–21.

The text is written in a neat semi-cursive hand, leaning to the right. ρ often has a short horizontal projecting from the base of its loop; υ is y-shaped; μ is deep and rounded; the cross-bar of ε is often detached, and may be written with the cap in a single movement; c may have

an extended cap. Cf. e.g. M. *Chr.* 306 (PGB 25) of 155.

Paragraphus is used at iii 17 (with high stop) and iv 16 (no doubt originally with high stop), and forked paragraphus with high stop at iii 4. Line fillers (>) are used at iii 8 and iv 11, and one should perhaps be restored at iii 23.

There is no sign that the text has undergone correction. There are minor omissions at iv 5 and 22, and apparently a more substantial one at iv 10–11. Iota adscript is always written. εἰ may be written for long ι (iii 15, 18, iv 4).

The content of the papyrus is principally therapeutic. The author is concerned above all with hot and cold as agents in his pathology and therapeutics; there is no reference to the action of dryness or moistness, or any other pair of opposites, in what remains, nor any clear indication that the author subscribed to any kind of humoral theory. Rather, hot and cold are solely responsible for all pathological phenomena mentioned, and naturally provide the means of counteracting them, with heat in particular relaxing excessively constricted flesh (cf. esp. iii 9–22).

A striking feature of the author's pathological vocabulary is his repeated juxtaposition of the terms *σφήνωσις* ('impaction') and *ἀπόθλιψις* ('squeezing out, expulsion') (iii 17–19 n.). The collocation of the terms *σφήνωσις* and *θλάψις* in other medical works is largely restricted to descriptions of interferences to the normal action of the pulse, through obstruction caused by a surfeit of blood within the vessel, or its being squeezed from outside (cf. e.g. Gal. *Puls.* 12 (viii 486.5–6 K.); *Caus. Puls.* 1, 2, 7, 12 (ix 57.16, 64.10–11, 167.15–16, 181.10–11 K.)). In the papyrus, the terms are used of a condition that affects 'the fine parts of the flesh' (iv 5–6) and is relieved by the relaxing effect of heat. It may be a general constriction or increased density of the flesh, which apparently involves a 'squeezing out' (*ἀπόθλιψις*) of material from the affected area.

The author is concerned to emphasize that the underlying 'constitutions of affections' (iii 10–11, iv 8–9) vary by nature, and that although some people use either only hot or only cold drinks, in fact choice should be governed by the kind of constitution that a given affection possesses (cf. esp. col. iii). Although fevers are referred to repeatedly in what survives (ii 4–5, iv 1, 19–21), they may not be the primary subject matter of the treatise, but a necessary part of a discussion of the treatment of diseases in general that are caused by the action of heat or cold. There is also repeated reference to conditions affecting the oesophagus (ii 7–8, 12–13, iv 21–2), but again these are apparently to be taken as examples of the more general types of condition under consideration.

Col. iv	Col. v
η περιψύξεως οί πυρετοί ω-	κριτ [
σινεναπασα γαρταιστοι	θως [
αυταιδιαθεσεως σφηνω	ο [
σιστικουσα και αποθλευσις	αυτο [
5 ευρισκεται κατα λεπτατη	5 μασια [
σαρκοστονδεδ ριγωσε	ονοσα [
χωσινη παρασ ενειαν	[.] [
των στοματων η διατην	το [
των παθων κατασκευην	τρεις [
10 ειμνηνεχ θαι αστων	10 μητε [
ψυχοντων οσα φα θερ>	χρο [
μωι χρηστεονκ [.] πειδαν	θε [
ιδρωτες εκκρι [.] ε [[
μενοι οδοτου [.] κ [[
15 αλλωσσυμφε [.] σ [	15 [
την διαθεσιν [	φ [
θερμομενου ε [	τα [.] νδ [
τοιουτων αριστηχ [.] [	εμε [.] ουν [
οταν δεθερινοικαι [.] λει	παρακελε [
20 ποντεςετιδεκαυσωδεις	20 βρωσπε [
ο [.] πυρετοιωσινηρ [.] υ [.] ατι	κρονουτ [
ηταιστομαχοσητρο ημ	[
[.] μβαιν καχεκτικ [.] ν	[.] [
[.] [[.] [

Col. i

18 [] , indeterminate traces 21 [] , foot of gently descending diagonal, slightly curved, at some distance from next letter; long vertical extending below notional lower line, followed by disjointed trace above and to right, most like ρ 25 [] , steeply descending diagonal at mid-height

Col. ii

1 [] , traces on the line and at letter-top level 2 [] , upright 3 [] [] , trace at mid-height; diagonal descending to right followed closely by vertical, ν rather than αι or λυ; lower portion of oval letter with trace of top, wide as of θ rather than ο; two low dots [] , low narrow arc close to ε; base of c? 4 [] , crossbar touching ο at top (γτ) [] , foot of upright extending below the line 5 [] , crossbar touching ω at top (γτ) [] , portion of diagonal ascending to right at mid-height 6 [] , tops of three strokes, the first belonging to a narrow oval letter, the second and third perhaps representing ν 7 [] , steep diagonal

Col. iv	Col. v
η περιψύξεως οί πυρετοί ω-	κριτ [
σιν εν άπάσαις γάρ ταίς τοι-	θως [
αύταις διαθέσεσιν σφηνω-	ο [
5 εύρίσκεται κατά (τά) λεπτά τής	5 αυτο [
σαρκός. όταν δε δυσρίγως ε-	μασία [
χωσιν η παρ' ασθένειαν	ονοσα [
των στομάτων η δια τήν	[.] [
των παθων κατασκευην,	το [
10 ει μη άνεχεσθαι τας των	10 τρεις [
ψυχόντων προσαφάς, θερ-	μητε [
μωι χρηστεον κα[ι] έπειδαν	χρο [
ιδρωτες εκκριθ[ωσι] ελ [	θε [
μεν οϊνοδοτου [.] και	[
15 άλλως συμπερ [.] σ [	15 [
την διαθεσιν [	φ [
θερμοϋ μεν οδν ε [	τα [.] νδ [
τοιούτων αριστηχ [.] [	εμε [.] ουν [
20 όταν δεθερινοί και διαλεί-	παρακελε [
ποντες ετι δε καυσωδεις	20 βρωσπε [
ο[ι] πυρετοί ωσιν η ρ[ε]υματί-	κρονουτ [
ζηται (ό) στόμαχος η τροφήη	[
σ]υμβαίνηη καχεκτικ [.] ν	[.] [
[.] [[.] [

with peak high in line, with tail touching α at mid-height 8 [] [] , low traces [] , part of slightly curving upright, as of c, followed by vertical 9 η, damaged trace touching η just below mid-height in space suiting a broad letter μ, lower left-hand arc of a circle ν, high trace, short horizontal stroke, or edge of upper arc of oval letter; top of diagonal with small hook to left, followed by top of vertical, most like ν, but ν perhaps not excluded: not αι το [] , upper arc of narrow oval letter c, of first two letters, feet of three verticals, the first with a small hook to right; last trace, perhaps lower left-hand corner of α χ, top of curve high in line, with a trace below 11 [] , upper and lower arcs (ε or c); foot of upright 12 α, horizontal high in line (γτ), then a vertical touching and projecting above it; high trace π, upper half of upright, curving to right at top 13 α, oblique ascending from left to right just below mid-height; beginning of oblique ascending from left to right slightly below the line [] , high trace [] , base of oval letter; beginning of oblique ascending from left to right 14 [] , top of upright; upper

arc of oval letter; top of upright, with trace of diagonal descending to right (*a?*); upper part of stroke curving to right and touching upright at top; tops of two diagonals meeting high in line 15], upright with small finial at top, consistent with ν 16 . . . , feet of two verticals 17 λ , trace on line ω , low arc ($\epsilon\epsilon$) τ , junction of two diagonals high in line 18 , beginning of diagonal rising from left to right low in line; two traces on the line; high crossbar η , low arc touching η ($\epsilon\epsilon$) 19], edge of left-hand arc 20], foot of upright leaning to right τ , damaged trace, apparently upright 21], left-hand arc], . . . , two high specks; high crossbar 24 τ , right-hand end of a high crossbar, touching ω], high trace 25 . . . , high traces

Col. iii

1], high trace], right-hand arc, e.g. \circ], . . .], beginning of diagonal rising from left to right, or foot of right-leaning upright; low trace 2], . . . , crossbar touching upright just below top, most like ϵ], left-hand side of oval letter 3 . . .], trace on the line; perhaps top of τ ; high trace], μ , high trace], τ , right-hand end of horizontal at mid-height], high trace 4 . . .], lower part of ϵ or ϵ , then upright with right-facing hook at foot 5 . . . , trace on line . . . , on damaged surface, confused traces including short high oblique descending from right to left 6 ϵ , foot of rising diagonal just below line, followed by low trace; lower part of vertical with blob at foot 7], rubbed traces], lower part of upright 8 π , upper and lower parts of back of ϵ or ϵ ; high trace], high trace 9 π , short horizontal touching ν at mid-height τ , top of upright on the right-hand side of a space suiting a wide letter 10] *a*, indeterminate trace], ι , top right of ϵ or perhaps τ touching ι 11], . . .], traces on damaged surface], ι , descending oblique joined by ascending oblique just above mid-height (*a* λ) 12], low trace], trace of upright 13], upper arc of narrow oval letter], low traces], upper part of vertical extending high above the line ($\phi\psi$) 14 , low traces 15], lower left-hand corner of α or δ 16 . . .], foot of vertical, followed by a small hook on the line, touching a further trace: η , suitable], foot of upright], high trace ρ , upper part of narrow oval letter 17 τ , high trace], feet of two uprights 18], trace at mid-height 20 . . . , two verticals 22 . . . κ , indeterminate trace; junction of two obliques high in line; small loop high in line ϵ , indeterminate traces a , low trace 23 ω , gently descending horizontal touching ω high in line ($\epsilon\tau$)], trace at mid-height ρ , η or ν ; lower part of narrow oval letter; upper and lower parts of back of ϵ or ϵ μ , traces on broken fibres 24], . . .], traces on damaged surface], π , indeterminate traces \circ , high traces

Col. iv

2 . . . , foot of vertical; indeterminate traces 5 . . . , high traces 6 . . . , high and low traces; right end of high gently descending horizontal 7 . . . , lower arc of very narrow oval letter 10 . . . , top and bottom of ϵ or ϵ ; stroke touching θ above mid-height ι , left tip of high crossbar 11 . . . , foot of upright; lower part of descender a , stroke touching tail of a 12], trace at mid-height], upper left-hand arc of circle 13 The second κ is written on a ρ], back of oval letter], ϵ , high traces; upper parts of λ (the second an upright) or μ 14], high crossbar touching ϵ or ϵ κ , triangular letter with tail touching upright (α or λ) 15], upright descending below the line], ϵ , high traces; high hook, $\nu\mu$? 17 ν , top and bottom of forward-sloping stroke], low trace 18 . . .], low traces], upper and lower parts of ϵ or ϵ 19 . . . , traces on damaged surface 21 ν , top of upright towards right of space suiting a wide letter 22 η , foot of ascending oblique, high trace above \circ , trace at mid-height 23], high trace ν , damaged traces including horizontal at mid-height], vertical followed by a further trace], ν , high traces 24 Traces on damaged surface

Col. v

1], back of oval letter 2], vertical 3 . . . , lower end of descender with trace at letter-top level on the right], low trace 7], foot of descender hooked to left ($\rho\tau$)], traces at mid-height and below 8], lower parts 9 ϵ , base of ϵ or ϵ ; foot of vertical 10 . . .], high crossbar

($\pi?$); top of oblique descending steeply from left to right 11 ρ , low trace of vertical], high trace ($\nu?$) 12], high trace 16], low trace 17], foot of upright hooked to left δ], low trace 18] ϕ , left-hand arc, with a trace to the right touching ν 20 . . .], ι or perhaps ρ ; high and low traces 21], two high traces 23], indeterminate trace

'... fever ... the stage ... conditions of the oesophagus (or stomach (?)), but without waiting to (give) much relaxation until the faculties are ... (and (until) there is a certain (?)) weakness which either causes chilling ... around the oesophagus or which brings (attacks (?)) characterized by ravenous hunger, and it is necessary to prescribe food at this time in the same way, in the beginning of the abatement when there is a lot of heat remaining in the bodies ... preserve ... relaxation ...

'... (dispose (?)) the bodies differently and ... (join together (?)) in order to (?) cure (each of them (?)). Therefore it is necessary to know that it is possible to use in all cases a cold drink, just as some people use in all cases a hot one, but since the (constitutions) of the affections differ, it follows of necessity that hot contributes something to the cure of some, while cold (contributes something) to (the cure) of others, since they bring different changes or alterations to the bodies. Therefore, if there should be impaction and squeezing out of the bodies, hot is to be preferred, since the flesh requires relaxation and slackening. For this reason in the crises of (such (?)) diseases ... painful ...

'... the fevers are ... or chilling. For in all such conditions, a certain impaction and squeezing out is found in the fine parts of the flesh. But when they are sensitive to cold, either from weakness of the openings or because of the constitution of the affections, if (they are) not (able (?)) to endure the touch of chilling things, one must use hot. And when sweats are secreted, ... prescribe wine ... otherwise ... the condition ... Hot ... such ... best. But when the fevers are summer (fevers), remittent, and burning, or the oesophagus is in flux, or from food it happens ... cachectic ...'

Col. i

20 τ] $\epsilon\kappa\kappa\alpha$] ρ -?
23-4 θ] $\epsilon\rho\rho\alpha\iota$] ν -.

Col. ii

1] $\epsilon\tau\epsilon\rho\upsilon\upsilon$] $\upsilon\sigma\tau\epsilon\rho\upsilon\upsilon$], $\epsilon\sigma\tau\epsilon\rho\upsilon\upsilon$].

8 $\delta\iota\alpha\theta$] $\epsilon\epsilon$] $\epsilon\zeta\upsilon\upsilon$: suggested by $\sigma\tau\omicron$] $\mu\alpha\chi\iota\kappa\alpha\iota\varsigma$ (τ), which regularly qualifies $\delta\iota\alpha\theta\epsilon\upsilon\varsigma$ in medical literature; cf. also iv 3. Perhaps $\sigma\tau\omicron$] $\mu\alpha\chi\iota\kappa\alpha\iota\varsigma$] [η] $\kappa\omicron\iota\lambda$] $\mu\alpha$] $\kappa\alpha\iota\varsigma$] $\delta\iota\alpha\theta$] $\epsilon\epsilon$] $\epsilon\zeta\upsilon\upsilon$?

9ff. 'Perhaps e.g. ($\acute{\epsilon}\nu$ $\tau\omicron\upsilon\tau\omicron\upsilon\iota$) $\tau\omicron\upsilon\iota$ $\kappa\alpha\iota\rho\alpha\iota$ | [$\tau\rho\acute{\epsilon}\phi\epsilon\upsilon$ $\chi\rho\eta$...] $\tau\omicron\upsilon\varsigma$ | [... $\acute{\epsilon}\pi\iota$ $\tau\alpha\iota\varsigma$ $\sigma\tau\omicron$] $\mu\alpha\chi\iota\kappa\alpha\iota\varsigma$ | ... $\delta\iota\alpha\theta$] $\epsilon\epsilon$] $\epsilon\zeta\upsilon\upsilon$, | [$\phi\alpha\nu\eta$] $\nu\alpha\iota$ $\delta\acute{\epsilon}$ $\mu\eta$ $\pi\epsilon\rho\iota\mu\epsilon\nu\omicron\iota$] [$\tau\alpha\varsigma$] π] $\omicron\lambda\lambda\eta\eta$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon$, $\acute{\alpha}\chi\rho\iota$ $\acute{\alpha}\nu$ | [$\acute{\alpha}\pi\alpha\theta$] $\epsilon\iota\varsigma$ $\acute{\omega}\varsigma$ $\alpha\iota$ $\delta\upsilon\nu\acute{\alpha}\mu\epsilon\iota\varsigma$. | [$\acute{\epsilon}\acute{\alpha}\nu$ δ] $\acute{\alpha}\epsilon\theta\acute{\epsilon}\nu\epsilon\iota\alpha$ η] ι , η $\pi\epsilon\rho\iota$ $\sigma\tau\omicron$] $\mu\alpha\chi\omicron\nu$ $\pi\epsilon\rho\iota\upsilon\psi\chi\omicron\upsilon\varsigma$ $\tau\epsilon\lambda\acute{\epsilon}\omega\varsigma$ η $\beta\omicron\upsilon\lambda\iota\mu\iota\omega\delta\epsilon\iota\varsigma$ $\acute{\omicron}\rho\acute{\epsilon}$] $\xi\epsilon\iota$] ϵ] $\acute{\epsilon}\pi\iota\phi\acute{\epsilon}\rho\omicron\upsilon\varsigma$, $\kappa\acute{\alpha}\nu\tau\alpha\upsilon\theta\alpha$ τ] η] $\tau\rho\phi\eta\eta$ $\pi\epsilon\rho\iota\tau\eta\acute{\nu}\epsilon\iota\alpha$ $\chi\rho\eta$] $\pi\alpha\rho\alpha\pi\lambda\eta\gamma\iota\omega\varsigma$, $\acute{\epsilon}\nu$ $\tau\eta\eta$ $\kappa\alpha\tau\alpha\rho$] $\chi\eta\eta$] $\tau\eta\varsigma$ $\pi\alpha\rho\alpha\kappa\iota\mu\eta\varsigma$ $\pi\omicron\lambda\lambda\eta\varsigma$ | $\theta\epsilon\rho\mu\alpha$] $\epsilon\iota\varsigma$] $\upsilon\pi\omicron\mu\epsilon\nu\omicron\upsilon\varsigma$ | $\acute{\epsilon}\nu$ $\tau\omicron\iota$] ϵ] $\kappa\acute{\omega}$] $\mu\alpha\varsigma\omega$, "at this stage, and without waiting for great remission to appear, one must feed the ... in stomach (?) conditions, until the capacities are healthy; and if there is a weakness that either chills completely around the stomach (?) or brings ravenous desires, in this case too one should prescribe food similarly, with much heat remaining in bodies at the beginning of the abatement". For the question whether one should wait for complete $\acute{\alpha}\nu\epsilon\varsigma\upsilon$ before proceeding with $\tau\rho\phi\eta$, cf. Herod. Med. ap. Orib. Coll. Med. 6.20.15 (CMG VI.1.1 175.37-176.2) $\epsilon\iota$ $\mu\acute{\epsilon}\nu$ $\pi\alpha\rho\acute{\epsilon}\iota\tau\epsilon\upsilon$ $\omicron\iota$ $\tau\eta\varsigma$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon\omega$ $\kappa\alpha\iota\rho\acute{\omicron}$, $\mu\epsilon\tau\grave{\alpha}$ $\tau\eta\eta$ $\acute{\alpha}\pi\omicron$ $\tau\omicron\upsilon$ $\beta\omicron\eta\theta\eta\mu\alpha\tau\omicron\varsigma$ $\tau\alpha\rho\alpha\chi\eta\eta$ $\kappa\alpha\iota$ $\tau\eta\eta$ $\acute{\alpha}\pi\omicron\kappa\alpha\tau\acute{\alpha}\sigma\tau\alpha\iota\varsigma$ $\tau\omicron\upsilon$ $\beta\rho\alpha\varsigma\mu\omicron\upsilon$ $\theta\rho\epsilon\pi\tau\acute{\epsilon}\omicron\upsilon$: $\acute{\epsilon}\pi\iota$ $\delta\acute{\epsilon}$ $\tau\omicron\upsilon\omega$ $\mu\eta\delta\acute{\epsilon}\pi\omega$ $\acute{\epsilon}\xi\alpha\nu\epsilon\mu\acute{\epsilon}\nu\omega\upsilon$, $\pi\epsilon\rho\iota\mu\epsilon\acute{\nu}\alpha\nu\tau\epsilon\varsigma$ $\tau\alpha\varsigma$ $\pi\alpha\nu\tau\epsilon\lambda\epsilon\iota\varsigma$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon\omega$ $\theta\rho\acute{\epsilon}\mu\omicron\mu\epsilon\nu$; also 6.20.21 (CMG VI.1.1 176.23-4) $\tau\omicron\upsilon\varsigma$ $\tau\eta\varsigma$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon\omega$ $\pi\epsilon\rho\iota\mu\epsilon\acute{\nu}\omicron\nu\tau\alpha\varsigma$ $\chi\rho\acute{\omicron}\nu\omicron\upsilon\varsigma$ $\epsilon\iota\varsigma$ $\tau\eta\eta$ $\tau\omicron\upsilon\omega$ $\lambda\omicron\iota\pi\omega\omega$ $\pi\rho\sigma\alpha\gamma\omega\gamma\eta\eta$; 7.8.1 (CMG VI.1.1 209.21-4) $\epsilon\iota$ $\mu\acute{\epsilon}\nu\tau\omicron\iota$ $\mu\eta\delta\acute{\epsilon}\nu$ $\acute{\epsilon}\xi\omega\theta\epsilon\upsilon$ $\acute{\epsilon}\pi\epsilon\beta\gamma\omicron\iota$, $\pi\epsilon\rho\iota\mu\epsilon\nu\epsilon\tau\acute{\epsilon}\omicron\upsilon$ $\tau\omicron\upsilon\varsigma$ $\tau\eta\varsigma$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon\omega$ $\kappa\alpha\iota\rho\acute{\omicron}$, $\kappa\alpha\iota$ $\mu\alpha\kappa\rho\omega\omega$ $\mu\acute{\epsilon}\nu$ $\acute{\omicron}\nu\tau\omega\omega$ $\tau\omicron\upsilon\omega$ $\delta\iota\alpha\lambda\epsilon\mu\mu\acute{\alpha}\tau\omega\omega$ $\acute{\epsilon}\nu$ $\tau\eta\eta$ $\pi\alpha\nu\tau\epsilon\lambda\epsilon\iota$ $\phi\lambda\epsilon\beta\omicron\tau\omicron\mu\eta\tau\acute{\epsilon}\omicron\upsilon$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon$ $\kappa\tau\lambda$. (WBH). For another interpretation, see the notes below.

9 . . .] $\nu\alpha\iota$. Perhaps $\delta\iota\delta\acute{\omicron}$] $\nu\alpha\iota$: cf. e.g. Aët. 6.10 (CMG VIII.2 151.17-18) $\delta\iota\acute{\omicron}\pi\epsilon\rho$ $\chi\rho\eta$ $\acute{\alpha}\nu\epsilon\varsigma\upsilon$ $\delta\iota\delta\acute{\omicron}\nu\alpha\iota$ $\tau\eta\eta$ $\phi\acute{\upsilon}\varsigma\epsilon\iota$ (but cf. also 9ff. n.). At iii 20-21, $\acute{\alpha}\nu\epsilon\varsigma\upsilon$ is found accompanied by its near-synonym $\chi\acute{\alpha}\lambda\alpha\varsigma\mu\alpha$, used of the

sort of relaxation that heat can bring to flesh affected by impaction and squeezing; cf. also ii 21–2. The reference at ii 12–13 to chilling around the oesophagus, which the doctor is perhaps directed not to wait for (but cf. 9ff. n. for a different view), suggests that *ἀνεσις* here likewise refers to the relaxation brought on by heat. The text thus seems to imply that the normal conditions for 'giving relaxation' are those caused by an excess of cold, but in this particular case (i.e. with conditions of the oesophagus?) the doctor should not wait for cold to chill the oesophagus before relaxing the patient thoroughly by the application of heat.

9–10 περιμενον[... μή may suggest that a participle should be restored, referring to the physician, who will be responsible for giving πολλήν ἀνεσις (but cf. also 9ff. n.). Considerations of space may slightly favour περιμενον[τος, -[τες, or -[τας over περιμενον[των. I assume that we should not take the participle to agree with τούς at 6, which is unlikely to refer to the physician. The author shows a marked preference for impersonal forms in giving his therapeutic recommendations (χρηή at ii 16; impersonal verbal adjectives at iii 20 and iv 12).

11 αἰ δυνάμεις. In view of the reference to weakness in the following line, this will refer to the patient's strength, rather than to 'natural faculties' (φυσικαὶ δυνάμεις), such as those controlling digestion, respiration, pulsation, etc. At the beginning of the line, ἀσθενεῖς seems a less likely restoration given the mention of ἀσθένεια in the next line, and is perhaps in any case too long. Cf. also 9ff. n.

12 ἀσθένεια requires a main verb before the two participles at 13 and 15. There may be a second clause introduced by ἄχρι ἃ at 10, e.g. καὶ ἤϊ ἀσθένεία τις ἢ περὶ στόμαχον περιψύχουσα ... ('... and (until) there is a certain weakness which either causes chilling around the oesophagus ...'). Cf. also 9ff. n.

13–14 [...]ωc. An adverb qualifying περιψύχουσα seems most probable. E.g. ἀθρόως or βραδέως would hardly fit the admittedly meagre traces. ὀ[μ]ο[ί]ως might suit, but it is not clear to what the chilling would be similar. Cf. also 9ff. n.

14 βουλιμώδεις, βουλιμία, or βούλιμος, a condition characterized by acute hunger pangs and weakness (cf. ps.-Gal. *Def. Med.* 256 (xix 418.16–419.2 K.)), is absent from the Hippocratic Corpus, and first attested in a medical context in ps.-Arist. *Probl.* (see below): cf. also Ar. *Pl.* 873; Alexis fr. 140.17 KA with Arnott's note; Xen. *An.* 4.5.8, 9; Cyr. 8.1.44. The adjective βουλιμώδης qualifies ἔκλυσις in Herod. *Med. ap. Orib. Coll. Med.* 5.30.15 (CMG VI.1.1 148.33–4) and διάθεσις at Gal. *Comp. Med. Loc.* 8.1 (xiii 122.5 K.); cf. also ps.-Jerome, *In Iob* 3 (PL XXVI 626D) *bolimiodes*. The condition is especially linked with cold. For example, Anon. Paris. II.1.1 (80.24–82.3 Garofalo) asserts that according to the doctrine of the ancients, bulimia is caused by chilling of the innate pneuma or by chilling of the blood in the veins of the intestinal membrane. Similarly, ps.-Arist. *Probl.* 8.9 (887b38–888a22) asks why people suffer from bulimia especially in the cold, and in winter more than in summer; cf. also Erasistr. fr. 284 Garofalo ap. Gell. *NA* 16.3.6.

[...]c. ἀκμ[ά]c gives possible sense, but the traces do not particularly suggest it. Cf. also 9ff. n.

Col. iii

1–4 δι[α]φόρωc (i) immediately preceding the sequence διατ[...]ω at 2 suggests that the latter is a verb, while the singular present verb at 3, following after καί, points to a parallel restoration. If so, διατ[ίθη]cω suggests itself, i.e. 'it/they dispose(s) the bodies differently'. The verb at 3 could be either c[υ]μβάλλ[ε]ται or ἐμ-βάλλ[ε]ται, but the production of different dispositions in the bodies referred to may indicate that the subject is a neuter plural, and the whole context of this passage, especially the immediate sequel in col. iii, suggests that this would be hot (τὸ θερμόν) and cold (τὸ ψυχρόν). Thus c[υ]μβάλλ[ε]ται is perhaps preferable, indicating that hot and cold are combined to produce the differing dispositions: '(hot and cold?) dispose the bodies differently and ... join together ...'. At the beginning of 3, we could have another adverb, as in I. WBH suggests instead that c[υ]μβάλλ[ε]ται πρ[ὸ]c | τὸ ... ἰατρεύει is to be taken together in the sense 'contribute to the curing': cf. LSJ s.v. *κυμβάλλω* I.9.

4 το[...]c. The right-facing hook of the letter immediately before the lacuna suggests that often found attached to the foot of the second vertical in a letter such as π or η, but also to ι when it is the second of a pair of letters that touch (cf. 15 κει); the preceding traces rule out η and π, suggesting perhaps ci or ei. Such a hook is occasionally also found in κ, however: cf. iv 5 εὐρίσκειται. Perhaps then πρ[ὸ]c | τὸ ἐκ[ά]τ[ε]ρον ἰατρεύειν, 'in

order to cure each' (but cf. also previous n.). This could refer to the different underlying constitutions that can characterize disease, to be treated by hot and cold respectively (see 4–17 and 1–4 n.).

6 μέν: answered by ἀλλ' at 9 rather than by δέ; see Denniston, *Greek Particles* 5–6.

11 [...]c. Most likely κ[ατα]c[κ]ε[υ]αί: cf. iv 8–9 τήν | τῶν παθῶν κατασκευήν.

13–14 τ[...]c. [προ]c[ε]ρε[σ]θαι supplied by WBH.

15 κενήcει: i. κινήcει.

17–19 For the collocation of the terms *σφίνωσις* and *ἀπόθλιψις*, see also iv 3–4. There appear to be no close parallels for their use with reference to an underlying pathological condition of muscular tissue as here. The term *σφίνωσις* is used by later authors to describe an aspect of Erasistratus' theory of the cause of fever (cf. e.g. fr. 60.13 Garofalo ap. Sor. *Gyn.* 3.4.1 (iii 4.68 BGM); Gal. *Ven. Sect. Er.* 3 (xi 153.15–154.4 K.)), and seems to go back to Erasistratus himself (cf. fr. 212.4 Garofalo). It is used in this context to refer to the 'impaction' or 'wedging' of blood, which has been pathologically transfused from the veins and forced along by pneuma, at the extreme ends of the arteries, where it causes inflammation and ultimately fever. But there is no sign that such a complex process is envisaged here. As for *ἀπόθλιψις*, the pathological 'squeezing out' or 'expulsion' of material caused by cold-induced contraction of tissue is appealed to in the Hippocratic Corpus: cf. e.g. *Loc.* 9.1 (vi 290.21–292.5 L. = 47.13–20 Joly = 46.30–48.3 Craik) *ρόοι δὲ γίνονται καὶ διαψυχομένης τῆς σαρκὸς λίην καὶ διαθερμαιομένης καὶ ὑπερφλεγματούσης καὶ ὑποφλεγματούσης. ῥόοι δὲ διὰ μὲν τὸ ψῦχος γίνονται, ὁπόταν τὸδε γένηται, ὅταν ἢ σὰρξ ἢ ἐν τῇ κεφαλῇ καὶ αἱ φλέβες τεταμέναι ἔωσιν αὐταί, φριξάσης τῆς σαρκὸς καὶ ἐς μικρὸν ἀφικομένης καὶ ἐκθλιψάσης, ἐκθλιβουσι τὴν ὑγρότητα, καὶ αἱ σάρκες ἅμα αὐταὶ ἀντεκθλιβουσι ἐς μικρὸν ἀφικνεόμεναι.* It seems likeliest that a generically similar process lies behind the author's use of the term *ἀπόθλιψις*.

18 ἀπόθλιψις: i. ἀπόθλιψις.

23 τῶ[...]ων: e.g. τῶ[...]ων.

There is space at the end of the line for perhaps two more letters, but not for τωv; a line filler seems most likely.

Col. iv

This column seems to be concerned with the therapeutic measures to be taken in cases of different types of affection, each section being introduced by ὅταν δέ: cf. 6, 19.

1–2 'Perhaps (e.g. ὅταν) μετὰ ῥίγους | ἢ περιψύξεως οἱ πυρετοὶ ὤ|cω: cf. for the pair e.g. 5238 6–16' (WBH).

3–4 σφίνωcίc τις οὐσα καὶ ἀπόθλιψις (i. ἀπόθλιψις): cf. iii 17–19 n.

5–6 κατὰ (τὰ) λεπτὰ τῆς | σαρκὸς. The 'fine' parts of the flesh must be areas where there are no large, fleshy muscles under the skin, and the bone is close to the surface, e.g. extremities, over the shoulder-blades, etc.: cf. e.g. Orib. *Coll. Med.* 44.5.2 (CMG VI.2.1 118.19). It seems necessary to supply the article τὰ, which of course could easily have fallen out (cf. the scribal omissions at 10 and especially 22).

8 τῶν στομάτων. These 'mouths', in the context of sensitivity to cold, may be the pores of the skin, or the interconnecting mouths of the internal vessels of the body (e.g. of the bile-ducts as at Gal. *Nat. Fac.* 2.2 (ii 78.7 K. = *Scr. Min.* III 157.18–19 Helmreich)).

10–11 A main verb (e.g. δύνανται) governing the infinitive ἀνέχεσθαι has apparently dropped out.

13–18 'Perhaps e.g.] θέλω|μεν οἰνοδοτοῦ|ντέc τc καί | ἄλλωc κυμφέρ|ουcι π|ᾶcι | τήν διάθεcιν [ιατρύ-εω.] | θερμοῦ μὲν οὖν ἐπ[ί] τῶν | τοιοῦτων ἀρίcτη χρη[σ]ίc' (WBH).

18 χἀλα[...]c might suit the meagre traces, denoting the slackening effect of heat: cf. iii 21 χαλάcματος. Cf. also iv 13–18 n.

19–20 θερμοὶ καὶ διαλείποντες ἔτι δὲ καυώδεic. All three terms are Hippocratic (θερμοί, e.g. *Epid.* II 3.1 (v 102.2 L.); διαλείποντες, e.g. *Epid.* V 71 (v 246.2 L. = 32.6 Jouanna), *Coac.* 412 (v 676.18 L.); καυώδεic, e.g. *Epid.* I 5 (ii 618.8 L. = i 185.14 Kw.), *Aph.* 4.54 (iv 522.7 L. = 422.9 Magdelaine)), and are commonly found thereafter.

21–2 β[ε]υματιζήται (ὁ) στόμαχος. According to Caelius Aurelianus, *Tard. Pass.* 3.2.14 (CML VI.1 686.19–21), flux of the oesophagus, *rheumatismus stomachi*, was discussed by Themison of Laodicea (fl. 1 BC) in book 1 of his *Chronic Diseases*. Caelius (ibid. 3.2.18–19, 28 (CML VI.1 688.29–690.7, 694.23–5)) characterizes such a flux by the presence of excessive saliva in the mouth, and sometimes copious vomiting and fainting. The remedies that he prescribes for it are primarily cooling (ibid. 3.2.27–8 (CML VI.1 694.12–22)): the patient should lie in a moderately cool room, be sponged with cold water, and be given aromatics which have a cooling effect. Caelius' discussion of the disease is certainly conditioned by Methodist doctrine, but these features of the affection are in keeping with the types of fever mentioned immediately before, and suggest that the papyrus text has moved on to a new section dealing with diseases that are to be treated by cold.

Col. v

12 θερ[μ-?

18 ἐμέ[τ]ου?

19–20 Most likely λά[β]ρωσ.

D. LEITH

5238. MEDICAL QUESTIONNAIRE

57/23(a)

10.5 × 19.5 cm

Second/third century
Plate VI

A column of 40 lines. The upper margin is 0.7 cm high and the lower margin 3.4 cm high, and these may be their original heights. The column height is c. 15.5 cm. The left-hand edge of the fragment runs along the edge of the column at the top, and the line ends are missing. The writing runs along the fibres. The back is blank.

The text is copied in a small, generally upright, somewhat crude round hand, with a thick pen. The loop of *a* may be pointed or rounded, sometimes with an open top. The cap and crossbar of *e* are made in a single curved movement, and the left-hand side and base often made in another curved movement, with a clear gap in the middle; or the left-hand side and base may be reduced to an upright. *κ* is U-shaped. *υ* often has a long tail, with right-hand branch and upright made in a single movement. *ε* is often joined to the next letter; cf. also e.g. *αρ* at 37. There is some resemblance to the hand of P. Berol. 7094 v. (BKT III 5–9), assigned to the second/third century; cf. also the more formal hand of I 9 + XXXIV 2687, assigned to the third century.

Question-headings may be separated from the preceding text by a long blank space (4, 12–13, 36 (?)) or, if the available space is limited, begin on a new line in *eisthesis* (2, 6–7, 17, 22 (?)). Where a question extends onto a second line, the second line is aligned with the beginning of the question. As WBH notes, although the second preserved question (6–7) extends onto a second line, the space to its left is only as high as that to the left of the single-line question that precedes (2), perhaps due to an effort to conserve space. There are numerous itacistic spellings, and no lection signs. The standard rules of line division are not observed (cf. 10–11 ε̄][μφασω).

The content is principally therapeutic (see esp. 12–16, 22–40, and perhaps 1–5) and prognostic (6–12), with an emphasis on fevers and certain symptoms associated with them. The text can be divided into three main sections. At 6–16, there is a focus on chilling (*περίψυξις*) and shivering (*βήγος*), in particular their prognostic significance (6–12) and their treatment (12–16). This is followed by a longer section devoted to fevers generally, and especially their treatment (17–40). The precise subject matter of the first section (1–5) is unclear.

There are several references to the stages of an illness: beginning (*ἀρχή*, 37), increase (*ἐπίδοσις*, 1, 39), peak (*ἀκμή*, 3, 40), and decline or abatement (*παρακμή*, 3 (?), 25 (?)). The distinctions, and the terminology, are standard in the Roman period (cf. e.g. 5233 ii 2–3 n.), and found elsewhere in papyri, e.g. MP³ 2373.01 (40 n.), BKT X 21. There are also references to the patient being in a stable condition (*ἀσφάλεια*, 3), and to a phase of recovery (*τοῖς ἀναλαμβανομένοις*, 5). There are some indications of Methodist influence in the discussion of fevers (cf. 20 n.).

For medical papyri in question-and-answer format, cf. 5235, 5239, 5241, LXXIV 4972 introd.; D. Leith, in L. Taub, A. Doody (edd.), *Authorial Voices in Greco-Roman Technical Writing* (2009) 107–23.

τοῖς ἐν ἐπειδόσει οὐκ τῆς ὑ[όρου
 τίςιν δὲ ἠ. . . ςη;
 τοῖς ἐν ἀσφαλείᾳ, ἀκμῇ καὶ π[αρακμῇ
 θεία καὶ πυκίλη. ^{vvv} τίςιν δὲ [
 5 τοῖς ἀναλαμβάνου(μέν)οις οἰκείως [
 πότερον χαλεπότερον περιψύξαι
 ἢ βείγος;
 περιψύξαι μετ' αἰσθήσεω[ς
 βείγος συνβαίνει τοῖς ἀσφαλῶς [έχουσι
 10 δίχα ἐσθήσεω, ἢ δὲ περιψύξαι
 μφασιν παρέχουσα προηγείτ[αι
 ὡν πυρετῶν. ^{vvv} τὸ βείγος πῶ[ς
 περιψύξαι;
 . . . [. . .] τα τὰ ψυχρ[ὰ
 15 νοῦντα οἶον ὀθ[ο]νίοις ἢ ἱματίοις [
 ἢ καὶ πυρία . . . ρης[. . .] . . .] . . . εστι . . . [
 τ[] ἐστὶν [πυρετ]ός;
 ἐπ[] τεταμένη θερμ[] ἢ θ[]ερμασία κ[]
 . . .] ον ἀπο[] ἐλ[. . .] ομένη τ[]
 20 . . .] τεω . . . [. . .] . . .] . . . ε στεγν[ωμέν
 . . .] υκ[. . .] . . . [. . .] . . .] εχετα[
 πῶς] δεῖ θερα[π]εῖν τοὺς [
 c. 10] υσαι τὸν πυρετὸν ἐπιτ[]
 βε]βρεγμένα ὑδρελαίω [
 25 ὕδ]ωρ θερμὸν ἐν τῇ παρ[ακμῇ
] σπέρμα θερμὸν κα[]
] ασια . . . ἐὰν δὲ δυσυπομο[νητ
] πείνειν δαψιλῆς ὕδωρ δ[]
] ἢν διὰ σφόγγων δοκεῖ . . . [
 30] υ ὑδρελαίω θερμῶ ἀναχά[α
] μένων δὲ τῶν πόρων ἢ κατ[]
] . . . ε. ἐὰν δὲ ρώδεις ἐπιγίν[ωνται
] . . . ιςτελλοντα μὲν ἐπιθε[]
] ὀθόνιον διὰ ψυχροῦ ὕδατος ἠψ[]
 35] α λε(ι)οτριβημένα διὰ κλυσι[]
] πῶς δεῖ θεραπεύειν τοὺς κα[ύτους;
 ἐ]γ ἀρχῇ μὲν τῆς νόσου τὴν α[]
 παρ]οξυμοῦ ἐπιβροχῇ ἐλαίου . . . [
 40 ἐ]ρίου καθαροῦ· ἐγ ἐπιδόσει δὲ [
 φλεβ]οτομεία· ἐν ἀκμῇ δὲ καὶ π[υ].

1 l. ἐπιδόσει η apparently written over ο 4 l. ποικίλη 6 χ written over κ 1. χαλεπότερον
 7, 9, 12 l. βίγος 9 l. συμβαίνει 10 l. αἰσθήσεω 15 l. -νοῦντα 27 ἐάν: ε made out of a
 28 l. πίνειν 30 αν: α written over another letter 32-40 several gaps left along a ridge in the writing
 surface, e.g. 39 ἐπιδόσ 40 l. φλεβοτομεία

'To those who are in the increasing phase of the disease ... (?).
 'And to whom ...?
 'To those in a stable condition, the peak, and (the declining phase) ... and varied.
 'And to whom ...?
 'To those who are in recovery, properly ...
 'Is (chilling) or shivering more serious?
 'Chilling ... with sensation ... shivering ... comes about for those in a stable condition ... without
 sensation, but chilling ... giving the appearance ... precedes ... fevers.
 'How (should one treat) shivering (and) chilling?
 '... the cold ... such as linens or cloaks ... and vapour baths ...
 'What is (fever)?
 'Increased heat (or) heating ... closed ...
 '(How) should one treat ...?
 '... the fever ... soaked in water mixed with olive oil ... warm water in the declining phase ... seed warm
 ... If ... difficult to bear ... drink plenty of water ... by means of sponges ... relax with warm water mixed with
 olive oil ... the pores ... If running (fevers) supervene ... strip of linen ... with cold water ... ground fine ...
 by means of a clyster ...
 'How should one treat burning fevers?
 '... in the beginning of the disease ... paroxysm, an embrocation of olive oil ... clean wool ..., and in
 the increase ... blood-letting, and in the peak ...'

1-5 This section consists of a series of three questions (the first lost) and the answers to them. There may
 have been further questions and answers belonging to the same series in what precedes. The focus is on patients
 in the different stages of illness. The questions are introduced by τίςιν, the answers by τοῖς. The verb governing
 these dates is lost: apparently it was given only in the first question. At 2, there seems to be a feminine nomi-
 native singular, ἠ. . . ςη. Of the first letter, a vertical survives with a diagonal descending from its top, consistent
 with either η (cf. 3 ακμη) or ν. The penultimate letter has the upper and lower curves of ε or c. The traces in
 between are badly damaged, but there is space for two letters. In the corresponding answer at 3-4, it seems clear
 that this is qualified by the adjective 'varied' (ποικίλη), and by another with the ending -θεία (βα|]θεία, 'deep?').
 ἢ μέγχι could well fit the traces, pointing to a mean between two extremes (qualifying e.g. δίατα, 'regimen?').
 I have been unable to find a convincing interpretation, however, and it remains unclear whether the general
 theme is therapeutic (e.g. 'To whom is (remedy X, Y, Z) beneficial (βοηθεῖ)?') or diagnostic (e.g. 'To whom does
 (symptom X, Y, Z) happen (γίνεται)?'). At 3-4, perhaps rather e.g. καὶ π[ολλή] ἐστὶν βοή[]θεια καὶ ποικίλη.
 Then the questions may be concerned with quantities of βοήθεια, perhaps starting with the highest and ending
 with the lowest. The asyndetic ἀσφαλεία ἀκμῇ (3) may be due to a supralinear correction incorporated into the
 text' (WBH).

1 ἐπιδόσει, l. ἐπι-. For the interchange of εἰ and ι, cf. Gignac, *Grammar* i 189-91.

4 ποικίλη, l. ποι-. For the interchange of οἰ and υ, cf. Gignac, *Grammar* i 197-9.

6-12 At 11-12, perhaps προηγείτ[αι ἀμφημεριν]ῶν πυρετῶν: cf. Gal. *Cris.* 2.3 (ix 653.4-6 K. = 134.4-6
 Alexanderson) τῶν δ' ἀμφημερινῶν οὐδὲ προηγείται βίγος οὐτ' εὐθὺς ἐξ ἀρχῆς οὔτε προϊόντων, ἀλλὰ περι-
 ψύχονται μόνου; also Paul. *Aeg.* 2.33 (CMG IX.1 106.24-6) τοῦ μὲν τριταίου μετὰ βίγους εἰσβάλλοντος, τοῦ
 δὲ ἀμφημερινοῦ χωρὶς βίγους, ὁ μικτὸς ἐξ ἀμφοῖν φρίκην ἐπιφέρει, βίγους μὲν ἑλαττόν τι πρᾶγμα, μείζον δὲ
 περιψύξεω. For the preceding lines, WBH suggests e.g. περιψύξαι μετ' αἰσθήσεω[ς ὄν, οὐδέποτε] βίγος συμ-
 βαίνει τοῖς ἀσφαλῶς [έχουσι, οὐδέ] δίχα αἰσθήσεω· ἢ δὲ περιψ[ύξαι, ἀκινδύνου] ἐ]μφασιν παρέχουσα, 'Since

it is chilling accompanied by sensation, shivering never comes about for those who are safely off, nor without sensation; on the other hand, chilling, which gives the appearance of (being something) free from danger, ...' For *ρίγος* as *περίψυξις μετ' αίσθήσεως* (8), cf. e.g. the conception mentioned in Gal. *Trem. Palp.* 6 (vii 610.14–16 K.), *τὸ ρίγουν ... κατάψυξις ἐστίν, ἀλλ' αἰσθητή*. But it is not certain that the ideas presented here are paralleled elsewhere, and the following supplement may also be considered: *περίψυξις μετ' αίσθήσεως γίνεται τὸ μὲν γὰρ] ρεῖγος συνβαίνει τοῖς ἀσφαλῶς [ἔχουσι γίνεσθαι] δόξα ἐσθήσεως, ἢ δὲ περίψυξις τοῖς ἐν ἀρχῇ ἐ]μφασίω παρέχονσα, 'Chilling (occurs) with sensation; for it happens that shivering (occurs) to those in recovery without sensation, but chilling makes itself obvious (to those in the beginning (sc. of the illness)) ...' The general point of this answer is presumably that *περίψυξις* is the more problematic or serious symptom.*

The physiological explanations of shivering, *ρίγος*, its relationship to trembling (*τρόμος*), and the action of cold in connection with these, appear to have been the subject of a considerable body of medical literature. Galen, for example, takes Athenaeus of Attaleia to task for discussing only the opinions of Asclepiades, Heracides of Pontus, and Strato of Lampsacus on *ρίγος*, and passing over the opinions of others no less reputable (*Trem. Palp.* 6 (vii 615.16–616.4 K.)). Galen takes it as self-evident that *ρίγος* cannot occur without the sensation of cold (*Trem. Palp.* 6 (vii 608.8–609.3 K.)). He also distinguishes *ρίγος* from chilling, *κατάψυξις*, primarily on the grounds that the former is a pathological condition, the latter not: although shivering cannot occur without some sort of chilling, the two can hardly be identified (*Trem. Palp.* 6 (vii 607.4–7, 610.13–614.2 K.)).

Both terms are Hippocratic. For their importance in prognostic contexts, as here, cf. *Prorrh. I*, e.g. 13, 35, 64 (v 514.6, 518.10, 526.6 L.), *ρίγος*; 7, 61, 134 (v 512.4, 526.3–4, 538.6 L.), *περιψύχων/περίψυξις*; 27, 31, 51 (v 516.10, 518.2–3, 522.13 L.), *κατάψυξις*; cf. also *Coac. I* (v 588.2 L.). Perhaps criteria for distinguishing such terms were developed in part in the context of Hippocratic exegesis. Palladius, for example, defines *ρίγος* in his commentary on *Epid. VI* (ii 22.6–7 Dietz): *ρίγος δὲ οὐδὲν ἄλλο ἐστίν ἢ περίψυξις καὶ κλόνος*. A very similar definition is given by Theophilus in his commentary on *Aph.* (ii 402.17–18 Dietz). Cf. also Hp. *Morb. I* 24 (vi 188.23–190.6 L. = 72.5–11 Wittern), which draws distinctions between strong *ρίγος* and *τέτραμος*, a weaker form simply called *ρίγος*, and the weakest form, referred to as *φρίκη*; the subsequent discussion seeks to explain why fevers supervene on *ρίγος*.

6 *χαλεπότηρον*, I. *χαλεπώτερον*. For the adjective, cf. e.g. Gal. *Hipp. Prorrh.* 2.48 (xvi 671.15–16 K. = CMG V.9.2 89.23–4) *καύκος μὲν γὰρ πυρετός ἐν τῇ περιψύξει χαλεπώτατον σύμπτωμα ἐστίν*, 3.33 (xvi 786.6–7 K. = CMG V.9.2 146.15–16) *χαλεπώτερα δηλονότι περίψυξις ἐστίν ἢ καθ' ὄλον τὸ σῶμα*. For the interchange of *ω* and *ο*, cf. Gignac, *Grammar* i 275–7.

7, 9, 12 *ρεῖγος*, I. *ρίγος*. Cf. 1 n. on the spelling.

9 *συνβαίνει*, I. *συν-*. For the unassimilated *ν* in composition, cf. Gignac, *Grammar* i 168–70.

10 *ἐσθήσεως*, I. *αἰ-*. For interchange of *αι* and *ε*, cf. Gignac, *Grammar* i 192–3.

12–16 The answer indicates that the question is concerned with the treatment of shivering and chilling; it sets out a number of therapies, including the use of linen and blankets to keep the patient warm (15), as well as a vapour-bath (16 n.). These warming remedies suggest that *τὰ θερμαί]νοντα* should be restored at 14–15. ('Or an acc. sing. masc., of the person providing the care' (WBH).) The question may be restored as follows, consistently with the average line length conjectured at 8–11 (for the phrasing, cf. 22, 36): *τὸ ρεῖγος πῶς δεῖ θεραπεύειν καὶ (τῆν)] | περίψυξιν*; ('How (should one treat) shivering and chilling?')

16 *πυρία* is probably in the dative case, like *ὄθ[ο]νίους* and *ἱματίους* at 15. A restoration such as *πυρία]ι* [*χρησ[θ]αι* would fit the traces; then WBH suggests *[ε]ξέσει*. (While it is not certain that the infinitive should be read, *χρησ[τ]έον* does not appear to be possible.) *η* at the start of the line could be either *ἦ* (cf. 15) or the end of another dative.

17–21 [*πυρετ]ός* at 17 is consistent with the reference to increased heat at the beginning of the answer (18), as well as with *πυρετόν* (23) and the reference to certain types of fever in the subsequent therapeutic section (esp. 32 *ροώδεις*; cf. n.). Fevers were also mentioned at the end of the preceding section (11–12). For the beginning of the answer in 18, cf. e.g. ps.-Gal. *Int.* 13.5 (xiv 729.11–12 K. = 48.7–9 Petit) *σημειούμεθα δὲ τοὺς πυρέττοντας ἐκ τε τῆς θερμῆς τῆς ἐπιτεταμένης καὶ ἀπροΐτου (διαπύρου I. Garofalo, Galenos 4 (2010) 276)*

οὔσης. ('Then perhaps *καὶ ἀπροΐτος* or *διάπυρος* at the end, as in ps.-Gal., but cf. also 19 n.' (WBH).)

19 *ἀπο[]ελ[]*. ['Perhaps e.g. *ἀπο[τ]ελοῦ[σα]*, with e.g. *καὶ εφύγμων | πικρῶν* before: cf. e.g. ps.-Gal. *Def. Med.* 185 (xix 398.5–7 K.) *πυρετός ἐστίν ἢ τοῦ ἐμφύτου θερμοῦ εἰς τὸ παρὰ φύσιν ἐκτροπή τῶν εφύγμων εφθορότερον τε καὶ πυκνωτέρων γενομένων*' (WBH).

] *ομένη* τ[; e.g. *γει]ρομένη* (I. γιν-) τ[ε WBH.

20 *ἐστεγν[ωμέν-* read and supplied by WBH. Cf. for the term MP³ 2373.01 fr. A ii 1 (ed. I. Andorlini, in ead. (ed.), 'Specimina' *per il Corpus dei Papiri Greci di Medicina* (1997) 161) *ἐστεγνωμένους*, with Andorlini's note (pp. 162–3); P. Turner 14.11 *ἐστεγνωμένων* (D. Leith, *BASP* 44 (2007) 127–8). As in those cases, the term may refer here to the Methodist common condition of 'stricture' (cf. 5233–4). The Methodists held that fevers could be characterized by one of the common conditions, i.e. stricture, flux, and their combination: cf. ps.-Sor. *Quaest. Med.* 149.3C (ed. K.-D. Fischer, in id. et al. (edd.), *Text and Tradition* (1998) 50; fr. 296 in M. Tecusan (ed.), *The Fragments of the Methodists* i (2004)) *Methodici autem sic responderunt, febrem esse qui ex alto surgit calor contra naturam, cum vitio stricturae vel fluxionis aut complicationis*. Fevers characterized by flux are discussed below at 17–21 (ways *ἐὰν δὲ ροώδεις ἐπιγένη[ωνται]*; for the term, cf. the Methodist fragment 5233 i 9). The definition at 32–onwards may have distinguished between the various kinds of fever; then treatments may have been set out for each in turn, with 'constricted' fevers coming first at 23–31. This would also make good sense of the references to 'relaxing' at 30 (*ἀναχαλ[-]*) and to pores at 31.

21] *μικ[] π]υκν[]* WBH, which would be consistent with 'constricted' fevers: cf. previous n.

] *εχεται[]*: e.g. *κα]τέχεται[]* WBH.

22–35 This section sets out a range of therapeutic measures apparently for the treatment of various forms of fever: cf. esp. 23 *τὸν πυρετόν*; 32 *ροώδεις* (see n.); and perhaps also 27 *δυσυπομό[νητοι]* (cf. n.).

22 *πῶς* δεῖ *θερα[τ]εῖν*: cf. 12, 36. 'The same is no doubt to be supplied at P. Mil. Vogl. I 15 → 9, 28: cf. I. Andorlini, *Pap. Congr. XIX* (1992) 389' (WBH).

τοὺς πυρέττοντας? WBH prefers [*πυρετούς*]: cf. 12–13.

23] *υσαι*: perhaps *λ]υσαι* or *ἐκλ]υσαι*. WBH suggests *θεραπε]υσαι*.

ἐπιτ[]. The final trace is the edge of an upright. WBH suggests *ἐπιτι[θ]ει* (or another form of the verb) followed by e.g. *ἔρια* (cf. 39) in agreement with *βε]βρεγμένα*: cf. BKT X 21.2–3 nn.

24 *ὑδρελαίω*. Cf. 30. For its uses, cf. BKT X 21.4 n.

26 *θερμόν* may go with what follows rather than with *σπέρμα*.

27] *ααι* : e.g. *θερμ]ααίαν* WBH.

δυσυπομο[νητ]. The variant *δυσυπομένητος* is used by Sextus Empiricus (*M.* 9.154, etc.), but the form restored here is the one used by other medical writers, e.g. Gal. *Loc. Aff.* 3.5 (viii 153.8 K.). It is not used elsewhere of a form of fever. 'In view of what follows, perhaps e.g. *δυσυπομό[νητον ἢ τὸ δύψος* or *δυψείν*: cf. Herod. *Med. ap. Orib. Coll. Med.* 5.30.7 (CMG VI.1.1 148.7–9) + P. Tebt. II 272 i 19–20 (MP³ 484.1) *εἰ γὰρ ἀνεξίκακος ἐν τοῖς λοιποῖς ἂν μὴ ὑπομένοι τὸ δυψείν, ἐπιτήδειος ἂν εἴη πρὸς τὸ πίνειν ἐν τῇ τοῦ παροξυσμοῦ ἐπίδοσει*' (WBH).

28 *χρη[]*, *δεῖ*, or *δίδου* *πείνειν* might be considered.

πείνειν. For the spelling, cf. 1 n.

29] *ην*. WBH supplies *πυρία]ν τῆν*.

30 *ὑδρελαίω*. Cf. 24 n.

ἀναχάλα (or another part of the verb) read and supplied by WBH.

31] *μένων*. WBH suggests e.g. *πυκνω]μένων*.

πόρων. The pores of the skin, or, if Methodist doctrine lies behind this section (cf. 20 n.), the imperceptible pores or interstices in the structure of the body, which can be closed, as here apparently, or opened up. The doctrine derives ultimately from Asclepiades of Bithynia's theory of matter (cf. 5236).

32 *ροώδεις*. This term is used of fever with diarrhoea and vomiting: cf. ps.-Gal. *Def. Med.* 191 (xix 399.17–400.2 K.). For its possible Methodist significance, see 20 n.

33] *ιτελλοντα μὲν ἐπιθε[]*. WBH suggests e.g. *καὶ μὴ παύων]ται, στέλλοντα μὲν ἐπιθε[]*, 'and do not stop, apply astringent ...' (or *ἐπιθε[]ματα*).

34 ηψ. [: η ψυ[χρ- WBH, comparing for the shape of the final letter-top υ in 35.

35] α: e.g. ἐν θυε[ίη WBH.

διὰ κλυςμ[read by WBH, who supplies κλυςμ[οῦ, κλύςμ[ατος, or a plural.

36 κα[ύσουε WBH: cf. 12–13, 22.

38 παρ]οξυςμοῦ ἐπιβροχῆ ἐλαίου. 'Cf. P. Turner 14.16–19 τίς ἄριστος καιρ[ός κατα]βροχῆς; καταβροχῆς καιρ[ός ἐπι] μὲν τῶν ὄλων παθῶν ὁ κατὰ τὴν ἀρχ[ομένην] αὔξησις. Perhaps here "before" or "until" in some form preceded' (WBH).

39 ἐ]ρίου supplied by WBH, who suggests e.g. δι' before. Cf. also 23 n.

40 φλεβ]οτομία (l. -τομία) read and supplied by WBH, with χρῆστέον or χρῆσθαι before governing the dative; for the spelling, cf. 1 n. On the right time for blood-letting, cf. MP³ 2373.01 fr. A ii 40–44 τίς | καιρὸς φλεβοτομίας; ἢ ἐπίδοσις μὲν | τοῦ ὄλου πάθους, ἀνεσις δὲ τοῦ κατὰ μέρος παροξυςμοῦ ἐντὸς τῆς πρώτης διατρήτου, with Andorlini (20 n.) 165.

πυ[ρίαις (or the singular) supplied by WBH.

D. LEITH

5239. MEDICAL DEFINITIONS

57/29(a)

5.5 × 10.5 cm

Second/third century
Plate II

The top of a column, with upper margin preserved to a depth of 2.3 cm, and right-hand margin to a width of 0.5 cm. There is a four-layer *kollesis* on the left. The back is blank.

The text is written in an informal round hand leaning slightly to the right. θ is broad, with its crossbar projecting slightly to left and right; υ may be V-shaped or looped at the top right-hand corner with deep bowl and curved tail sweeping to the right (cf. 4 υγρου); ω is broad, with high central cusp. Cf. XVIII 2161 (*GMAW*² 24), L 3533 (*GMAW*² 86), both assigned to the second century, and P. Berol. 9780 r. (Didymus; *PGB* 20, MP³ 339), assigned to the second/third century.

The definitions are articulated in question-and-answer format: cf. 5238 above. High stop marks the end of each answer (2, 6, 9), and was no doubt accompanied by paragraphus. The supplements indicate that indentation was not employed. The use of the high stop is paralleled in the medical questionnaire GMP I 6, but there each question appears to have begun on a new line in *eisthesis*.

Lines 8–15 overlap with the third-century papyrus P. Oslo inv. 1576 v. 1–5 (ed. A. Maravela-Solbakk, D. Leith, *Pap. Congr. XXIV* (2007) 637–50; MP³ 2340.02). For such overlaps in medical questionnaires on papyrus, cf. P. Ross. Georg. I 20.68–93 (MP³ 2343) and MP³ 2343.01 3–17 (P. Strasb. gr. inv. 849, ed. C. Magdelaine, in I. Andorlini (ed.), *Testi medici su papiro* (2004) 63–77), on σταφύλωμα; P. Ross. Georg. I 20.94–115 and P. Aberd. II fr. i.2–20 (MP³ 2342), on πτερύγιον.

P. Oslo inv. 1576 v. 1–5 is highly fragmentary, but so far as it is preserved, it corresponds exactly to 5239, except that a different spelling is used for ὑγροκήλη (cf. 15–16 n.), and the gaps in each of the papyri can be filled with some confidence from the other. Nevertheless,

the textual tradition of compilations of this sort was highly fluid, and we should not conclude that they represent exactly the same text. The three medical questionnaires on eye conditions mentioned above overlap but display notable variations. P. Oslo inv. 1576 belongs to a batch of papyri purchased by S. Eitrem in Egypt in 1936, of which several pieces have been shown to be from Oxyrhynchus and Oxyrhynchite villages. There is thus a possibility that it was copied in Oxyrhynchus at about the same time as 5239.

The surviving text is restricted to simple definitions of pathological conditions, as in P. Aberd. 125, ps.-Gal. *Def. Med.*, and ps.-Sor. *Quaest. Med.* Other medical questionnaires on papyrus that deal with individual diseases address additional aspects such as aetiology and treatment. The sequence of conditions is perhaps somewhat unexpected, in that the apparently predominant theme of tumours or swellings in the area of the groin (κονδύλωμα, 1–2; ἐντεροκήλη, 10–15; ὑγροκήλη, 15–16), to which the less localized swelling ἀπόστημα (2–6) could also logically belong, is interrupted by the definition of αἱμορραγία, haemorrhage, at 7–9.

Despite some more or less close parallels with definitions found in other collections such as ps.-Gal. *Def. Med.* (see 1–2, 8 nn.), there is little sign of any direct relationship with extant medical texts of a comparable sort. On the textual relationships of such medical papyri in question-and-answer format to other medical compilations, cf. I. Andorlini, in A. Garzya, J. Jouanna (edd.), *I testi medici greci* (1999) 7–15; GMP I 6 introd.; A. E. Hanson, in A. Garzya, J. Jouanna (edd.), *Trasmisione e ecdotica dei testi medici greci* (2003) 199–217.

In the transcription, the contribution of P. Oslo inv. 1576 v. 1–5 is placed within upper half-brackets.

...] . [] . η στολίδων
 ἐπαν]άστασις. τί ἐς-
 τιν ἀπό]στεμα; ὄγκος
]θής ὑγροῦ πε-
 5]ος ἀναβρωτι-
 κήν δύ]ναμιν ἔχων.
 τί ἐστιν] αἱμορραγία;
 'λάβρος] ἔκ'χυ[ε]ις αἷμα-
 τος μετ'] ἀκοντισμοῦ.
 10 'τί ἐστ'ι]ν ἐντεροκήλη;
 ἐντέρου] κατ'τολίθη-
 σις' κατ]ὰ μὲν ἀρχὰς
 εἰς βουβ]ῶν'α, ὕστερον
 δέ' καὶ εἰ]ς αὐτὸν τὸν
 15 ὄσχεον.] τί ἐστ'ιν] ἡ γ'ρο-
 κήλ'η; ἀρ]χοῦ ὑχ[ρο]ῦ
 κύστασις] . [

2 σις· 3 l. ἀπόστημα 6 χων· 9 μου· 12 c written on another letter (o?) 13 ὀ
 15 ἐστιν: surplus ink to left of ι

'... swelling of folds. What is ἀπόστημα? A tumour ... fluid ... which has a corrosive property. What is αἱμορραγία? A violent effusion of blood with emission. What is ἐντεροκήλη? A prolapse of the intestine initially into the groin, and later even into the (scrotum) itself. What is ὑγροκήλη? (A collection) of idle fluid ...'

1] . [] . η. WBH suggests e.g. a definition ending in -[ε]ις, followed by ἢ introducing an alternative.
 1-2 στολίδων | [ἐπαν]άστασις. These terms or their cognates appear regularly in surviving definitions of κονδύλωμα: cf. ps.-Gal. *Def. Med.* 420 (xix 446.16-17 K.) κονδύλωμά ἐστι δακτυλίου στολίδος ἐπανάστασις μετὰ φλεγμονῆς; Paul. Aeg. 6.71, 80 (CMG IX.2 113.5, 124.13-15); Paul. Nic. 71.1-9 Ieraci Bio (p. 151); and in a gynaecological context Aspasia ap. Aët. 16.118 (155.23-5 Z.). WBH adds Aët. 14.3 (Laur. plut. 75.7 f. 61v-62r; col. 835 Cornarius (1549)) τὸ λεγόμενον κονδύλωμα ἐν ἔδρα γίνεται τῶν ἐπαναδιπλωμένων σωματῶν ἐν τῷ δακτυλίῳ στολίδος τινὸς ἐπανισταμένης καὶ διογκουμένης παρὰ φύσιν. Poll. 4.203 (1 261.9-10 Bethe) offers a somewhat different definition, also near definitions of ἐντεροκήλη and ὑδροκήλη: κονδύλωμα περὶ τὴν στεφάνην τοῦ δακτυλίου εὐίατον οἴδημα.

2-6 In the first part of the definition (3-5), WBH suggests ὄγκος | [ἐνερευ]θής ὑγροῦ πε[ριε]κτικ[ός]ος: cf. Paul. Aeg. 6.36 (CMG IX.2 74.19-20) τὰ μὲν ἰδίως ἀποστήματα καλούμενα φλεγματώδη τέ ἐστι καὶ ἐπώδυνα καὶ δριμύος ὑγροῦ καὶ διαβρωτικοῦ περιεκτικά, and for ἐνερευ]θής, e.g. Paul. Aeg. 4.17.2 (CMG IX.1 334.17-18) τῆς ἰδίας ὀνομαζομένης φλεγμονῆς ... ἣτις ὄγκος ἐστὶν ἐνερευθής κτλ. The definition in the papyrus diverges significantly from other surviving definitions, which generally mention an alteration or mortification of tissue and the production of pus: cf. ps.-Gal. *Def. Med.* 387 (xix 442.10-11 K.) ἀπόστημα ἐστὶ μεταβολὴ σωματῶν ἐκ φλεγμονῆς εἰς πύον (cf. also 411 (xix 445.5-6 K.)); Gal. *MM* 14.12 (x 984.5-10 K.) διττὸν δὲ καὶ τούτου (sc.

τοῦ ἀποστήματος) τὸ γένος, ἐν μὲν ὅταν ἐκπηχάσῃς φλεγμονῆς ἀθροισθῆ τὸ πύον ..., τὸ δ' ἕτερον ἀνευ φλεγμονῆς προηγησαμένης, ὑγροῦ τινος εὐθύς ἐξ ἀρχῆς ἄλλοτε μὲν ἄλλου κατ' εἶδος, ἀλλὰ πάντως γε μὴν δριμύος ἀθροισμένου κατὰ τι μόριον (cf. also *Tum. Pr. Nat.* 3 (vii 715.7-11 K.)); Orib. *Ec.* 97.1 (CMG VI.2.2 273.7-10) ἀπόστημα ἐστὶ φθορὰ καὶ μεταβολὴ σαρκῶν ἢτοι σαρκωδῶν ... συμμεταβαλλόντων καὶ συνδιαφθειρομένων τοῖς ἐεσημένιοις σώμασι καὶ τῶν περιεχομένων ἐν αὐτοῖς ὑγρῶν (cf. Paul. Aeg. 4.18.8 (CMG IX.1 338.6-7)).

8 λάβρος] ἔκχυ[ε]ις. Cf. ps.-Gal. *Def. Med.* 460 (xix 456.14-16 K.) αἱμορραγία ἐστὶν αἵματος λάβρος ἔκχυσις κατὰ περιέρρυσιν μὲν μεγάλης οὐσῆς τρώσειω, κατ' ἀκοντισμὸν δὲ εἰς στενότητα τυγχάνουσα ὡς ἐπὶ τῶν φλεβοτομιῶν.

9 μετ'] ἀκοντισμοῦ supplied by WBH: cf. Aët. 3.13 (CMG VIII.1 273.20), Orib. *Coll. Med.* 7.10.2 (CMG VI.1.1 211.27-8).

10ff. Hernias, κῆλαι, of various kinds are referred to also in the question-and-answer papyri PSI III 252 (partial re-edition: GMP II 14), and in SB XXVIII 17136.3 (ed. J.-L. Fournet, in I. Andorlini (ed.), *Testi medici su papiro* 2004) 177-9; cf. also LXXIV 4975 ft. 1.8 πρὸς ἐντεροκηλῆδια παιδίων, P. Mich. XVII 758 F 5 ἐντερο[κηλῶν].

10-15 ἐντεροκήλη. WBH compares Leonid. ap. Aët. 14.21 (Laur. plut. 75.7 f. 71v; ch. 23, col. 851 Cornarius (1549)) ἡ ἐντεροκήλη κατολίθῃσις ἐστὶν ἐντέρου ποτέ μὲν κατὰ τὸν βουβῶνα γυνομένη, ποτέ δὲ κατὰ τὸν ὄσχεον ... γίνεταί δὲ τὸ πάθος ποτέ μὲν κατ' ἐπέκτασιν τοῦ περιτοναίου, ποτέ δὲ κατὰ ῥήξιν. ἐπὶ μὲν οὖν τῆς κατ' ἐπέκτασιν, κατ' ἀρχὰς μὲν εἰς τὸν βουβῶνα ἢ χάλασις γίνεταί ... ἐπὶ πλείον δὲ μεγεθυνομένου τοῦ ὄγκου καταβιβάζεται καὶ διογκοῖ τὸν ὄσχεον.

13 βουβῶνα supplied by WBH here and in P. Oslo inv. 1576 v. 4 (βουβῶν]α): cf. 10-15 n.

15-16 [ὑ]γρο[κήλη]. Cf. Fournet (10ff. n.) 178 with n. 12 for this variant form of ὑδροκήλη. P. Oslo inv. 1576 v. 5 has ὑδροκηλ[η]. For the definition, cf. ps.-Gal. *Def. Med.* 424 (xix 447.11-12 K.) ὑδροκήλη ἐστὶν ἀργοῦ ὑγροῦ κύστασις κατὰ μέρος τοῦ ὄσχεου.

17 The end of the definition was no doubt close to that given by P. Oslo inv. 1576 v. 6-8, where WBH tentatively supplies κατὰ] τὸν ἐρυτρ[οειδῆ] ἀραιουμένων τῶν] τὸν ὄσχεον κ[αταπλεκόντων] ἀγγ[ε]ίων, comparing Leonid. ap. Aët. 14.20 (Laur. plut. 75.7 f. 70r; ch. 22, col. 849 Cornarius (1549)) ἡ ὑδροκήλη γίνεταί ποτέ μὲν ἐξ ἀδήλου, ποτέ δὲ ἐκ προδήλου αἰτίας· ἐξ ἀδήλου μὲν ἐκ τοῦ αὐτομάτου ἀραιουμένων τῶν καταπλεκόντων τὸν ὄσχεον ἀγγείων κτλ. The ed. pr. proposes ἢ ὑπὸ] τὸν ἐρυτρ[οειδῆ] ἢ ὑπὸ τὸν δαρτὸν | ἢ ὑπὸ] τὸν ὄσχεον κ[αί] τι μέρος τῶν ?? | ἀγγ[ε]ίων.

D. LEITH

5240. TREATMENTS FOR EYE CONDITIONS

16 2B.46/C(b)

Fr. 3 6 × 5.9 cm

First century
Plate X

Four fragments with text running along the fibres. Lower margin is preserved in fr. 4 to a depth of 1.3 cm and left margin in fr. 2 to a width of 1 cm. The back is blank.

The text is written in an informal and irregular upright round hand. It is only approximately bilinear, with φ projecting above and below the line. α has a pointed loop; the cap and crossbar of ε tend to be made in a single movement, which may be ligatured to the following letter; the branches of κ may be separated from the upright; μ is deep; the oblique of ν often continues to the left of the first upright, producing a small hook; π has a curved right-hand side; τ may have a split top, and its upright may turn noticeably to the left at the foot; υ may be Y-shaped or V-shaped. II 216 (*GLH* 10a), assigned to the first century, has a similar appearance.

P. Lond. II 260 (Kenyon, *Palaeography* Pl. V) of c. 73 is a document with a number of the same letter-forms.

Iota adscript is written consistently in datives in -ωι. ἀγγίτριον is written for ἀγκ- (fr. 1.1, 4), ταρρός is spelt with -ρρ- rather than -ρσ- (fr. 3.7), ει represents long ι (fr. 1.5), and ν is left unassimilated in composition (fr. 2.3). Diaeresis is applied to the υ of ὑπο(-) at fr. 1.5 and 6 and used organically in mid-word at fr. 3.6. A paragraphus is found under fr. 2.2 and a new section begins below, with its first line projecting into the left-hand margin by about the width of a letter. Expunction dots are used at fr. 1.2, and corrections are made by adding or replacing letters above the line (fr. 3.6, 9). There is no evidence that more than one hand has contributed.

Fr. 1 is concerned with surgery for pterygium, fr. 2 with encanthis, fr. 3 probably with surgery for an everted eyelid, and fr. 4 with cataract surgery. In fr. 1 and 4, we find second-person singular imperatives (fr. 1.5, fr. 4.7 n.), and in fr. 3, a first-person singular past-tense narrative (3, 8, 13). The order is uncertain, but encanthis and pterygium are likely to have been considered close together, as commonly (cf. fr. 1 n., fr. 2.3ff. n.).

Ophthalmological texts on papyrus are collected by M.-H. Marganne, *L'Ophthalmologie dans l'Égypte gréco-romaine d'après les papyrus littéraires grecs* (1994), hereafter 'Marganne'; a recent addition is the fourth-century questionnaire P. Strasb. gr. inv. 849 (MP³ 2343.01), published by C. Magdelaine in I. Andorlini (ed.), *Testi medici su papiro* (2004) 63–77. Particularly relevant to the present papyrus are the second-century questionnaires P. Ross. Georg. I 20 (MP³ 2343, Marganne ch. 4) and P. Aberd. II (MP³ 2342, Marganne ch. 3), each of which includes a section on surgery for pterygium.

The purpose of the present text is unclear. It may have belonged to a manual for a student, or else to an account of lectures on surgical procedures for the benefit of an educated audience, illustrated with some successful cases. If so, it would be similar in purpose and form to Galen's *Anatomical Procedures*: cf. e.g. Gal. *AA* 1.1; 7.10, 12–13; 8.6 (ii 215.1–218.15, 618.5–623.8, 626.14–634.12, 681.3–684.9 K. = 1.1–5.10, 441.25–447.30, 453.1–461.29, 519.11–523.11 Garofalo).

A point of interest is the appearance alongside more or less familiar diminutive forms used of medical tools (fr. 1.1, 4: ἀγκίτριον; fr. 1.5: κμιλάριον) of a new term, περιιάδιον, for which see fr. 3.6 n.

Fr. 1

]. ας λαβὼν ἀγγίτριον[ν
]τέίνων αὐτὸ [τὸ α][
 τὸ] πτερύγιον πρὸς αὐτὸ[
]ι ἄλλωι ἀγγιτριῶι κα[
 5] ὑπόδερε ζμειλαρίω[ι
] ας ὑπο[

Fr. 2

... [. . .]
] πρὸς [. . .]
] ἐγκανθ[ι . . .] καν-
] θοῦ τ[. . .]
 5] αφθω[. . .]
] . . . [. . .]

Fr. 1

1, 4 l. ἀγκ- 2 τὸ α 5, 6 ὑπο 5 l. κμιλαρίωι

Fr. 2

3 l. ἐγκανθι-

Fr. 3

]. [. . .] . . . [. . .]
] τὸν τύλον ἐπ[ι]μ[ε]
 τ]οῦ ὀφθαλμοῦ ἤρχο[
]ν πρὸς τῶι κροτάφω[ι
 5]δε τοῦ ἄλλου ἀπὸ τοῦ κρο[τάφου
 π]εριιάδιωι π[α] ἔ ρ ἰ αἰρεῖν πρ[
 τῶι] ταρρῶι ἔξωθεν εἶθο[
]ν ἔξωθεν ἕως ἐξεγλυψ[
 τὸ]ν τύλον τὸν ποιοῦ ἴτα [. . .]
 10]οπην κα[ι] εἰ μὲν εἰς τ[
] . . . τὸ βλ[έ]φαρον παρα[
]μη ἔξωθε[ν]
]εν ἔτεμνον [. . .]

Fr. 4

]. [. . .]
] ἐπιθεῖς [. . .]
 δ]εσμενο[
]τιν ὄταν [. . .]
 5] ἐκ τοῦ β[
] εντεινη[
]χε δὲ καὶ ἐσ[

Fr. 3

6 ἰαδι πᾶρα

Fr. 1

'... taking a small hook ... stretching it ... the pterygium towards ... other small hook and (?) ... detach with a small knife ...'

Fr. 2

'... to (?) ...
'Encanthis ... corner of the eye ...'

Fr. 3

'... the callus carefully (?) ... the eye ... I began ... by the temple ... the other from the temple ...; ... to remove with a small round-bladed knife (?) ... the edge of the eyelid from outside ... from within until I (?) scooped out ... the callus making ... eversion (?) and if ... the eyelid ... from outside ... I cut ...'

Fr. 4

'... placing ... bind ... when ... from the ... couch ... and ...'

Fr. 1

Instructions for excision of the pterygium, a triangular growth of fibrovascular tissue spreading towards the cornea. Ps.-Gal. *Int.* 19.6 (xiv 784.4-7 K. = 93.3-7 Petit) has a brief account: τὰ πτερύγια ... περιαιρούμεν ... ἢ λίνω ἀνατείναντες ἢ ἀγκίστρῳ. In his detailed account, Celsus (7.7.4 (CML I 313.5-314.16)) describes the use of a hook and then a thread, together with the handle of a scalpel, to lift the pterygium before it is cut out with a scalpel. Aët. 7.62 (CMG VIII.2 315.9-316.9) and Paul. Aeg. 6.18 (CMG IX.2 58.15-59.6) have a procedure in which the pterygium is detached with a horse's hair by means of a saw-like action before the adhering parts are cut out; Paul mentions a procedure like that described by Celsus, not involving a horse's hair, as an alternative. There are brief and fragmentary accounts on papyrus in P. Aberd. II fr. i.9ff. and P. Ross. Georg. I 20.110-15. See further Marganne 129.

1 ἀγγίστριον: I. ἀγκίστριον. On γ for κ, see Gignac, *Grammar* i 79. In the operation for pterygium as described by Aëtius (7.62), two different hooks (ἀγκίστρα) were used (CMG VIII.2 315.10, 15; 316.1): a blunt hook that served to keep the eyelid open, so that the operation could proceed, and a small sharp hook that was inserted in the middle of the pterygium and used to lift it. Both types have been identified by archaeologists: cf. e.g. J. S. Milne, *Surgical Instruments in Greek and Roman Times* (1907) 85-8; R. Jackson, *Britannia* 17 (1986) 139-43; id. in L. Allason-Jones (ed.), *Artefacts in Roman Britain* (2011) 255-7; E. Künzl, *Medizinische Instrumente aus Sepulkralfunden der römischen Kaiserzeit* (1983) 19. It is not clear to which type of hook ἀγγίστριον refers here. WBH argues that it is the hook used to raise (cf. 2 n.) the lid, as the lids must be separated before the 'other hook' (4) can be used to lift the pterygium. For the use of the word in medicine, cf. Antyll. ap. Orib. *Coll. Med.* 50.5.4 (CMG VI.2.2 58.11). In the papyri, it is otherwise found only in P. Aberd. II fr. i.12-13; it is not clear which form was used in the lacuna in P. Ross. Georg. I 20.113.

2]τείνων. Probably ἀνατείνων, which is frequently used in this context: cf. Aët. 7.62 (CMG VIII.2 315.11, 16; 316.3); Paul. Aeg. 6.18 (CMG IX.2 58.22, 25, 29); also ps.-Gal. *Int.* 19.6 (xiv 784.7 K. = 93.6 Petit). αὐτὸ τὸ αἶμα. αὐτό might refer to the pterygium, the hook, or the thread that may be used to hold the pterygium up, but other possibilities cannot be excluded. 'Perhaps rather the eyelid: cf. 1 n. The scribe may have begun to write τὸ ἀγγίστριον, present in his exemplar as a (perhaps supralinear, and perhaps incorrect) explanation of an ambiguous αὐτό, before realizing his mistake and cancelling the superfluous letters' (WBH).

3 τὸ πτερύγιον πρὸς αὐτό: αὐτό [αὐτῶ], or αὐτῶν. The reference may be to the action of the surgeon who has to lift the pterygium and gently detach it by means of a thread and a horse's hair, starting from the cornea and moving towards the caruncle, or to the use of a scalpel handle to separate any part of the pterygium that adheres to the eyeball, as mentioned by Celsus (7.7.4B (CML I 313.21)), but see next n.

4] ἄλλω ἀγγιστρίῳ κα: I. ἀγκιστρίῳ. Probably τῶ, κα. The reference is perhaps to the sharp rather than the blunt hook: cf. 1 n. 'The procedure described appears to be the simple one known from ps.-Gal. *Int.* 19.6. The author seems to have moved quickly from the introduction of the "other hook" (used for lifting the pterygium) to the excision (5). There will scarcely have been room for the procedure described by Aëtius and Paul of Aegina involving the use of a horse's hair to separate the pterygium gradually from the eye. Even the use of a thread to keep the pterygium raised seems unlikely to have been included. In P. Aberd. II fr. i.12-13,

the hook and the needle and thread may be presented as alternatives, as in ps.-Galen: cf. I. Andorlini, *CE* 70 (1995) 313, who suggests (after Turner) δι' ἀγκί|στρείου ἢ βελόνης [where Marganne 104-5 has ἀγκί|στρείου, βελόνης] (WBH).

5] ὑπόδερε ζμειλάρῳ: I. ζμειλάρῳ. For the spelling with ζμ-, cf. Gignac, *Grammar* i 121-2. Aët. 7.62 (CMG VIII.2 315.21) and Paul. Aeg. 6.18 (CMG IX.2 59.1) have the term πτερυγοτόμος. For the alleged form of such a knife, a small narrow sharp-pointed scalpel with a right-angled trapezoidal blade, cf. e.g. Milne (1 n.) 44-5; Künzl (1 n.) 120 fig. 96, from a tomb in Wehringen (Bavaria). The diminutive ζμειλάρῳ is found in various medical texts and once elsewhere in the papyri, at P. Iand. VIII 148 v. 6 (II). O. Claud. II 408.6 (II) has ζμειλεῖν (I. ζμείλιον) in a letter accompanying the dispatch of a scalpel, a surgical knife (ξυράφιον), and medicine; τιμιλαν (I. ζμείλην) appears in GMP II 10.8 (VI/VII) in a request for medical tools. ζμειλάρῳ also appears in lists of medical instruments found in Isidore of Seville and in various mediaeval manuscripts (Isid. *Etym.* 4.11: *similiaria*; H. Schöne, *Hermes* 38 (1903) 283; *hismiliarium*; K.-D. Fischer, *MLatJb* 22 (1987) 32-3; ζμειλάρῳ and *exmellarium*; cf. L. J. Bliquez, *DOP* 38 (1984) 202).

Fr. 2

3ff. Encanthis. Cf. for this condition and surgical treatments e.g. ps.-Gal. *Def. Med.* 361 (xix 438.5-6 K.) ἐγκανθίς ἐστὶν ὑπεροχὴ σαρκὸς ἐν τῷ μεγάλῳ κανθῶ, *Int.* 16.6, 19.6 (xiv 772.5-7, 784.4-7 K. = 81.23-82.2, 93.3-7 Petit), Orib. *Syn.* 8.56.1 (CMG VI.3 269.2-3), Aët. 7.63-4 (CMG VIII.2 316.10-317.2), Paul. Aeg. 3.22.20 (CMG IX.1 178.18-23), Cels. 7.7.5 (CML I 314.17-26).

3-4 ἐγκανθίς (I. ἐγκ-) ... καν|θοῦ supplied by WBH: 'perhaps a definition, beginning e.g. ἐγκανθίς ἐστὶ τοῦ μεγάλου καν|θοῦ'. For ν left unassimilated in composition, cf. Gignac, *Grammar* i 168-70.

There is a short horizontal stroke on the left-hand edge at the level of line 4, of uncertain significance. 5 ἀφθῶ. 'E.g. *ων|αφθῶ|σιν, περι|αφθῶ|σιν?*' (WBH). A reference to aphthas (ἀφθῶν or ἀφθῶ[δ-]) is unlikely. *ἐπερρ|ἀφθῶ, κατερρ|ἀφθῶ, or ἀνερρ|ἀφθῶ* would be wrongly divided (cf. perhaps 5238 10-11).

Fr. 3

Account of surgery for a condition affecting the eyelids. Some puzzles remain, but to judge from 8-13 (cf. nn.), the condition involved is probably ἐκτρόπιον (everted eyelid), for which cf. Cels. 7.7.10 (CML I 318.13-22); Aët. 7.73-4 (CMG VIII.2 322.24-324.20); Paul. Aeg. 6.12 (CMG IX.2 55.1-24).

2 τὸν τύλον ἐπ[ε]μει. Perhaps ἐπ[ε]μει[λῶς]; otherwise e.g. a form of ἐπιμελέομαι, or ἐπὶ μεί. Calluses or callosities are connected with conditions such as *trachoma* and *ptilosis*: cf. Aët. 7.45, 80 (CMG VIII.2 297.13-298.11, 328.6-10); Paul. Aeg. 3.22.12, 17 (CMG IX.1 176.15-18, 177.21-3).

3 ἤρχο: ἤρχο[ν], ἤρχο[μην], ἤρχο[ντο]. Aët. 7.74 (CMG VIII.2 323.24) ἀπὸ τοῦ μικροῦ κανθοῦ ἀρχόμενοι supports the second, and may indicate that little is lost at either end of the line: cf. 4, 8-10 nn. (WBH).

4] ὑ πρὸς τῶι κροτάφῳ. Probably ἀπὸ τοῦ πρὸς τῶι κροτάφῳ|ι κανθοῦ, meaning the small angle of the eye, towards the temple, by analogy with the great angle which is sometimes called ὁ κανθὸς πρὸς τὴν ῥίνα or παρὰ τῆ ῥίνι (e.g. ps.-Gal. *Int.* 16.6 (xiv 772.6 K. = 82.1 Petit)); cf. Aët. 7.60 (CMG VIII.2 313.6-7) ἀπὸ τοῦ πρὸς τῆ ῥίνι κανθοῦ τοῦ μεγάλου καλουμένου. A reference to the small angle as temporal is found in Cels. 7.7.4A (CML I 313.7-8).

6 π]ερίαιδιος: supplied by Prof. I. Andorlini. The word is new, but cf. *κατιάδιον*, diminutive of *κατιάς*, 'lancet', which is thought to be derived from *καθίτημι* (Chantraine, *Dict. étym. s.v.*). *κατιάδιον* is known only from Aret. 1.2.9 (CMG II 146.19), but *κατιάς* is slightly more frequent and appears in the lists of instruments (fr. 1.5 n.). Diminutives in -διον are often used for medical tools. This instrument for 'cutting around' may have been a scalpel with a curved blade, of a type used for eye surgery: cf. e.g. Milne (fr. 1.1 n.) 43-9; Künzl (fr. 1.1 n.) 52 no. 23. Cf. perhaps Lat. *circumcisorium*, a surgical instrument used on hooves, with *TLL* s.v.

π]α|ε|ρ|ί|αι|ρε|ίν: παρ|αι|ρε|ίν corrected to περι|αι|ρε|ίν. The verb *περ|αι|ρε|ίν* was frequently used in surgical contexts: e.g. ps.-Gal. *Int.* 19.6 (xiv 784.4-5 K. = 93.3-4 Petit), for operations on the encanthis, pterygium, and staphyloma; also Aët. 7.74 (CMG VIII.2 323.6), in the context of surgery for *ἐκτρόπιον*.

πρ]. Probably πρ[ός; τρον], with a straight-stemmed τ and a smallish ο, not excluded.

7 τῶι] ταρρῶι. On ρρ and ρσ in the papyri, cf. Gignac, *Grammar* i 142–5. The tarsus is a cartilaginous plate which forms the margin of the eyelids, where the eyelashes grow: cf. e.g. Gal. *UP* 10.7 (iii 793.5–17 K. = ii 79.13–26 Helmreich).

εἶθo]. Perhaps to be read as εἶθ' ο], e.g. ὁ[μοίως, ο[ύτως. WBH notes that εἶταν would be difficult in a past-tense narrative.

8 ἐξέγλυψ]. ἐξέγλυψ[α and ἐξέγλυψ[αν are possible, but hardly ἐξέγλυψ[αc to judge by 3 and 13. For different forms of ἐκγλύφω, cf. e.g. Gal. *UP* 12.10, 14 (iv 42.9, 57.8 K. = ii 212.2, 223.2 Helmreich); Aët. 7.82, 85 (CMG VIII.2 330.1, 331.14).

8–10 D. Leitch suggests that the object of ἐξέγλυψ[- is ὄλον τὸν τύλον τὸν ποιοῦντα [τὴν ἐκτρ]οπήν. The line length is uncertain, but the condition is suitable: cf. notes below.

10]οπήν, perhaps the end of ἐκτροπή, 'eversion' of the eyelid, but ἐκκοπή, 'cutting out, excision', could also fit the context. Both are employed by Aëtius, 7.74 (CMG VIII.2 323.9, 15; 324.13, 16), in describing the surgery for the eversion of the eyelid (ἐκτρόπιον).

κα[ι] εἰ μὲν. WBH compares Paul. Aeg. 6.12 (CMG IX.2 55.10–12) καὶ εἰ μὲν ἀναλάβοι τὸ σχῆμα τὸ βλέφαρον καὶ εἶως τραπέη, ἀρκούμεθα τῇ χειρουργίᾳ· εἰ δὲ ἔτι ἐκτρέποιο κτλ.

εἰςτ[] can be the beginning of a verb, such as εἰστρέπομαι, which is used in some manuscripts of Aët. 7.74 (CMG VIII.2 323.17–18) in a description of the operation on the eversion of the eyelid; see also, in another context, Heliod. ap. Orib. *Coll. Med.* 46.10.4 (CMG VI.2.1 219.21, 22). Otherwise e.g. εἰς τ[ά] or another form of the article: cf. Aët. loc. cit. τὸ βλέφαρον εἰς τὰ ἐντὸς τραπῆσεται μέρη.

12]μη. Possibly negative μή, in the protasis of a condition, e.g. εἰ δὲ] μή: cf. 10' (WBH).

13]εν ἔτεμον: or] ἐρέτεμον [Both verbs are used in medical writings, the latter especially in surgical contexts. WBH proposes ἔρωθ]εν: cf. 12; Paul. Aeg. 6.12 (CMG IX.2 55.12–14) εἰ δὲ ἔτι ἐκτρέποιο ..., ... κατὰ τὸ ἔωθεν μέρος τοῦ βλέφαρου δόντες δύο διαιρέσεις κτλ.

Fr. 4

Instructions for couching a cataract: cf. esp. 6, 7 nn. The operation is described by Cels. 7.7.14 (CML I 319.29–322.10), ps.-Gal. *Int.* 19.7 (xiv 784.7–12 K. = 93.7–12 Petit), and Paul. Aeg. 6.21 (CMG IX.2 60.5–61.29). ὑπόχυμα is discussed together with γλαύκωμα in P. Ross. Georg. I 20.55–67. See also 5241 fr. 1.3 n.

2] ἐπιθείς [This could be the operation to the patch that has to be placed on the healthy eye to hold it still while the other is operated on (cf. 3 n.), or to the medicine that has to be applied to the eye that is operated on. Less probably, it could refer to the position of the patient or to that of the doctor's finger on the eyelid. The finger is used to press the eyelid and to move it gently while observing the movement, if any, of the cataract, in order to decide if an operation is possible or not. The patient has to be seated facing the surgeon, in a well-lit room, and turned towards the light, but not in direct sunlight. See Cels. 7.7.14C (CML I 321.15–16); Paul. Aeg. 6.21.2 (CMG IX.2 61.3–5).

3 δ]εμυσο[: a form of δεσμεύω or one of its compounds, e.g. ἐπιδεσμεύω. WBH suggests the present participle passive, since an active participle would be expected to be in the nominative singular masculine, agreeing with the subject (cf. 7 n.). Cels. 7.7.14C (CML I 321.18–20) recommends placing a woollen pad over the sound eye before the operation and bandaging it to keep it still: cf. Paul. Aeg. 6.21.2 (CMG IX.2 61.4–5). (ἐπι)δεσμεύω is less common than (ἐπι)δεσμέω. The latter is used e.g. by Paul. Aeg. 3.35.1 (CMG IX.1 221.7–8) in conjunction with ἐπιτίθημι in a passage relating to the application of a poultice for a breast condition; in describing the bandaging that follows the cataract operation (6.21.2), he uses ἐπιτίθημι together with ἐπιδέω (CMG IX.2 61.21–2). ἐπιτίθημι is also found together with δεσμέω in e.g. ps.-Gal. *Rem. Parab.* 3 (xiv 534.17 K.); Paul. Aeg. 4.16 (CMG IX.1 334.5).

4]τω. Probably ἐς]τω.

5 ἐκ τοῦ β]. β[λεφάρου would not suit a set of instructions for cataract surgery. Perhaps β[άθου: cf. Paul. Aeg. 6.21.2 (CMG IX.2 61.12–13) τῆς ἐπὶ τὸ βάθος φοράς. WBH suggests that the verb was e.g. φαίνεται

or ὀράται: cf. Paul. Aeg. *ibid.* (CMG IX.2 61.14–16) ὀράται δὲ ὁ χαλκὸς προφανῶς διὰ τὴν διαφάνειαν τοῦ κερατοειδοῦς χιτῶνος.

6] εντευν: perhaps παρα]κεντεύν. The verb is used by e.g. Gal. *UP* 10.1 (iii 761.1 K. = ii 55.22–3 Helmreich), ps.-Gal. *Int.* 19.7 (xiv 784.8 K. = 93.7–8 Petit), and Paul. Aeg. 6.21.2 (CMG IX.2 61.8) to describe the couching of the cataract.

η]. 'E.g. ἡ[ρέμα: cf. Cels. 7.7.14E (CML I 321.27–9) *inclinanda acus ad ipsam suffusionem leviterque ibi verti et paulatim eam deducere infra regionem pupillae debet*' (WBH).

7]γε δὲ καὶ εσ]. 'Supply α]γε οὐ κατά]γε δὲ καὶ ἐς [Cf. Paul. Aeg. 6.21.2 (CMG IX.2 61.13–17) ἄνωθεν οὖν κατὰ κορυφὴν τοῦ ὑπόχυματος τὸ παρακεντητήριον ἄγοντες ... καταγάγωμεν δι' αὐτοῦ εἰς τοὺς ὑποκειμένους τόπους τὸ ὑπόχυμα κτλ. εἰς(-) seems to be used at fr. 3.10; for ἐς in documents, cf. Gignac, *Grammar* i 258' (WBH).

M. HIRT

5241. ON EYE CONDITIONS

57/23(b)

Fr. 1 5.3 × 10.9 cm

Second/third century
Plate VIII

On the back of an account, and upside down in relation to it, three fragments written across the fibres. The lower margin is preserved in fr. 1 to a depth of about 2 cm. The blank space at the top of fr. 2 may represent the upper margin; that at the foot of fr. 3 probably represents the lower margin.

Fr. 2 and 3 are written in a plain medium-sized hand comparable to that of VIII 1100 (*GLH* 206) of 206. Fr. 1 is written with a thicker pen but the letter formation is similar to that of the other fragments and it does not seem necessary to suppose that a different writer is at work, though this is a possibility. For variation in the work of a single writer on a single medical text, cf. esp. P. Strasb. gr. inv. 90 (MP³ 2379; Kalbfleisch, *Pap. argent. gr.* Pls. I–II), discussed by I. Andorlini, in A. Garzya (ed.), *Storia e ecdotica dei testi medici greci* (1996) 14 with n. 24; 5248 introd.

Diaeresis is written over initial υ (fr. 2.7; 3.2, 8). Middle dot marks the end of an answer in the questionnaire (fr. 2.10; 3.5, 8, 17). An omission at fr. 3.16 is corrected by an addition above the line by the original hand. ο for ω is found at fr. 1.4, εἰ for ἔ at fr. 3.14, and οἰ for υ at fr. 3.16.

The distance between the fragments is unknown. To judge by parallel texts, e.g. ps.-Gal. *Int.* 16.1–9 (xiv 767.1–775.13 K. = 77.7–84.17 Petit), fr. 1 may have come close to fr. 2, while fr. 2 and 3 may have been quite widely separated.

Fr. 1 contains a list of eye conditions arranged by the part affected, while fr. 2–3 contain definitions of eye conditions, presented in the form of a questionnaire. Fr. 1 may itself have formed part of the answer to a preceding question, but this is quite uncertain. Medical questionnaires or catechisms, probably manuals for the use of doctors or medical students, are known from about 20 papyrus texts, dating mostly from the second to the fourth century. Three others deal with ophthalmology: P. Aberd. II, of the second century (MP³ 2342; M.-H.

Fr. 1

'... about (the pupil (?)) ... cataract ... short-sightedness ...; (about) the corners of the eye and ... tumours in the inner angle of the eye and (discharges (?)) ...; ... the black of the eye ... they call ...; (about the nerve descending) from the brain ... rupture ... and prolapse ...'

Fr. 2

'What is irritation and what is ophthalmia and (...) what is inflammation?

'They call it irritation when the eye ... for two or three days ... responsible ... smoke, dust ...; and (there is) ophthalmia when ... occurs in ... by one of the ... becoming (?) ...; they call it inflammation ... are red.'

Fr. 3

'... scars as ... the membrane ...

'What is an excavated ulcer?

'... a clean, small ulcer, (similar to) punctures, ...

'What is a white speck?

'... the black of the eye, and ... and reddish (on) the white.

'What is a cloud?

'... a small ulcer on the black of the eye ...

'What is a mist?

'... similar to misty air ...

'What is a blister?

'An ulcer coming to be ... impure ...

'What is a hypopyon?

'... a collection of pus throughout ... (they) call ...'

Fr. 1

Classification of eye conditions. The conditions are listed in the nominative, and each affected part stands in the accusative, introduced by *περί*. The chapter on eye conditions in ps.-Gal. *Int.* begins with a similar catalogue (16.1 (xiv 767.1-768.10 K. = 77.7-78.17 Petit)), followed by brief definitions of most of the conditions mentioned. The papyrus appears to have the affected parts in a different order and to have a less detailed inventory. Cf. the shorter but more elaborate list in Aët. 7.2 (CMG VIII.2 254.31-256.3); also ps.-Gal. *Def. Med.* 326, 351 (xix 433.3-9, 436.17-437.2 K.); ps.-Sor. *Quaest. Med.* 343.2-3 L. Fischer; Paul. Nic. 32.9-16 Ieraci Bio (p. 96). In ps.-Sor., the list of eye conditions answers a question, but the answer does not (as in the present list) mention the part of the eye that is affected in each case. The last preserved section, on conditions affecting the optic nerve (9 n.), is likely to have come towards the end of the list, to judge by the *Introductio* and Aët. 7.2 (CMG VIII.2 255.27-8). There is no observable overlap with the other fragments, but the conditions discussed in fr. 3 may have been mentioned in the section on the black of the eye (7-9).

If the line length is approximately the same as in fr. 2 and 3, there may be about 17 letters lost on the left in each line.

1] [: the foot of an upright; an upright descending below the line (ρ , ι , or τ ?); an upright followed by the foot of a short descending oblique (κ ?); an upright followed by the foot of a short descending oblique (not κ , but η ?) or an upright followed by the lower end of c or ϵ ; three specks on the line.

The first line must have contained the end of a set of eye affections. Apart from the categories mentioned below, ps.-Gal. *Int.* 16.1 (xiv 767.1-768.10 K. = 77.7-78.17 Petit) considers diseases of the whole of the ocular globe (δ ὄλος ὀφθαλμός), the corneo-scleral fold (*στεφάνη*), the sclera (*λευκόν*), and the eyelids or the membranes (*ὀμίνες*). None of the many possible conditions seems a good fit for the traces.

2] . Perhaps an α with its tail extended at the end of a sentence: there appears to be a trace of the loop at the lower left-hand corner. Alternatively, perhaps a *diple obelismene* used to divide sections: cf. 5235.

$\pi\epsilon\rho\iota$ δ[ε marks the start of a new section, probably concerned with diseases affecting the pupil (3 n., 4 n.);

$\pi\epsilon\rho\iota$ δ[ε τὴν κόρη] is likely. Ps.-Gal. *Int.* 16.1 (xiv 768.6-8 K. = 78.13-16 Petit) has in this section *ἤλος*, *ὀπόχυσις*, *γλαύκωσις*, *μυδρίασις*, *φθίσις*, *κύχχυσις*, *πλατυκορίασις*, *ἀμαύρωσις*, *ῥυτίδωσις*, *ἡμεράλωψ*, *μυωπίασις*, and *διαπύρησις*. Of these, *ὀπόχυσις*, *γλαύκωσις*, *μυδρίασις*, and *φθίσις* appear in all medical sources (i.e. ps.-Gal. *Int.* and *Def. Med.*, Orib., Aët., Paul. Aeg., ps.-Alex. Trall., Leo Med., and Ioan. Act.), connected either directly with the pupil or with the vision in general; *κύχχυσις*, *νυκτάλωψ*, and *μυωπίασις* appear in most of them, while *ἀμαύρωσις*, a total impairment of the vision, is sometimes considered a disease of the optic nerve. Two of them are still legible here, *ὀπόχυσις* (3) and *μυωπία* or *μυωπίασις* (4). The list may have included most, if not all of the most common conditions.

3] *ις*. Of the remaining conditions ending in *-ις* commonly found in medical writings, *γλαύκωσις*, *μυδρίασις*, *φθίσις*, *κύχχυσις*, and *ἀμαύρωσις* could fit. See next n.

ὀπόχυ[ις] or *ὀπόχυ[μα]*. In the Roman period, *ὀπόχυσις* was defined as a coagulation of a humour between the crystalline and the uvea (cf. e.g. Rufus ap. Orib. *Syn.* 8.49.1 (CMG VI.3 266.16-20)), and subsequently identified with the modern cataract. Since they are often considered together, *γλαύκωσις* appears a logical choice for the word preceding or following *ὀπόχυσις*. On these two conditions, cf. e.g. Mergante, *Ophthalmologie* 100-103, 122-3; *HPLS* 1 (1979) 199-214; *MHJ* 36 (2001) 23-33; also K.-D. Fischer, *MHJ* 35 (2000) 127-47; id. in S. Sconocchia, L. Toneatto (edd.), *Lingue tecniche del greco e del latino* iii (2000) 69-79.

4] *ωσις*. Ps.-Gal. *Int.* lists three diseases of the pupil ending with this sequence: *γλαύκωσις*, *ἀμαύρωσις*, and *ῥυτίδωσις*. *γλαύκωσις* (cf. previous n.) is listed in all the medical sources. *ῥυτίδωσις*, which is mentioned only in the catalogue of the *Introductio* and is not explained in the chapter itself, is perhaps less likely to be mentioned here. *ἀμαύρωσις*, usually a total impairment of vision, is described in the lists as a disease connected either directly with the pupil or more broadly with the vision, and due either to an unknown cause or to a problem with the optic nerve, e.g. ps.-Gal. *Int.* 16.1, 10 (xiv 768.7, 776.8-9 K. = 78.15, 85.10-12 Petit); Paul. Aeg. 3.22.31 (CMG IX.1 185.15-16); Aët. 7.50 (CMG VIII.2 304.7-305.2).

4-5 *μυωπία[ις]* (l. *μυω-*): or possibly *μυωπία* (l. *μυωπία*). On σ for ω , see Gignac, *Grammar* i 275-7. For this condition, cf. ps.-Gal. *Int.* 16.1, 10 (xiv 767.5, 768.8, 776.12-14 K. = 77.11, 78.15-16, 85.15-17 Petit); *Def. Med.* 347 (xix 436.3-5 K.); Aët. 7.47 (CMG VIII.2 301.1-5); Paul. Aeg. 3.22.35 (CMG IX.1 187.4-9).

5] *καυθὸς καί*. The accusative indicates that this introduces a new section, on the diseases affecting the corners of the eyes. Before *καυθὸς*, one would expect *περὶ δὲ τοὺς*, as in 2; cf. 7 and 9. Ps.-Gal. *Int.* 16.1 (xiv 767.17-18 K. = 78.5-7 Petit) here again gives the most extensive list of the conditions affecting the angles of the eyes. They are specified in a separate section, between the diseases of the lids and those of the sclera (*λευκόν*), and include *ἐγκανθίς*, *ἀγκύλη*, *πτερόγιον*, *ῥυάς*, *πρόσφυσις*, *αἰγίλωψ*, and *ἀγχίλωψ*. Aëtius mentions in his introduction, 7.2 (CMG VIII.2 255.15-17), only three of them, *αἰγίλωψ*, *ἐγκανθίς*, and *ῥυάς*, but at 7.60 and 65 (CMG VIII.2 313.3-10, 317.3-5), he regards *πτερόγιον* and *αἰμορραγία* as also affecting the corners of the eyes. Ps.-Gal. *Def. Med.* 351 (xix 436.17-18 K.) treats them together with the diseases of the eyelid: *περὶ τὰ βλέφαρα καὶ τοὺς καυθὸς συνίσταται πάθη ταῦτα*. So here we may consider restoring *καὶ* | [*τὰ βλέφαρα*, as these are commonly associated with the angles of the eye.

6 *ἐγκαυθίδες καί*. Probably *καὶ* | [*ῥυάδες*, as these two conditions are often named together; cf. Aët. 7.2 (CMG VIII.2 255.16), Paul. Aeg. 3.22.20 (CMG IX.1 178.18-28), ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.3), Ioan. Act. *Diagn.* 2.7 (446.15 Ideler). For *ἐγκανθίς*, cf. 5240 fr. 2.3ff. n.

7] *ετο μέλαν*. As this is the beginning of a new section concerning 'the black of the eye', we expect *περὶ*] $\delta\epsilon$. The first trace is a short vertical low in the line on the edge: δ is not suggested, but in view of the damage to the surface, it is not excluded. *μέλαν* in medical texts is used in a broad sense and refers to the iris as well as the section of cornea that covers it, so that diseases of the *μέλαν* may be attributed either to the iris or to the cornea; on the iris, cf. e.g. Galen *UP* 10.2 (iii 767.16-769.3 K. = ii 61.4-62.5 Helmreich). Ps.-Gal. *Int.* 16.1 (xiv 768.3-6 K. = 78.10-13 Petit) does not list any diseases of the cornea, but instead names 17 conditions relating to the iris (*ἱρις*). Aëtius in his introduction, 7.2 (CMG VIII.2 255.17-22), distinguishes between diseases of the cornea and those of the iris, but later, e.g. 7.27-30 (CMG VIII.2 273.18-277.6), describes the former as affecting the black of the eye (*μέλαν*) or the iris (*ἱρις*). The conditions most commonly attributed to the black of the eye are

ἄργεμον, βοθρίον, κοίλωμα, ἀχλύς, νεφέλιον, ἐπίκαυμα, φλυκτίς, οὐλή, λεύκωμα, ὑπόπνον, and various forms of πρόπτωσις (μυιοκέφαλον, σταφύλωμα, ἦλος, μῆλον; cf. e.g. Paul. Aeg. 3.22.22 (CMG IX.1 179.27–180.2)).

8–9]ματα λέγου[ci. At the beginning, κοιλώ[ci]ματα, ἐπικαύ[ci]ματα, σταφύλω[ci]ματα, and λευκώ[ci]ματα are possible, preceded by αἰ; ὑποσφάγ[ci]ματα is perhaps less likely as this condition is usually believed to affect the white of the eye (e.g. ps.-Gal. Int. 16.1, 7 (xiv 768.1, 773.7–10 K. = 78.8, 82.22–83.1 Petit)) or the conjunctiva (e.g. Aët. 7.22 (CMG VIII.2 270.4–7)). On the kinds of staphyloma, cf. e.g. Aët. 7.36 (CMG VIII.2 286.18–287.13), and for the expression, cf. 5243 iii 13–14 πρ(ός) αἰ ἐπο[νομάζουσι]ν ὑπ[ο]χύματα; Gal. Tum. Pr. Nat. 17 (vii 732.9–10 K.) τὰ δὲ σταφυλώματα καλούμενα; also ps.-Alex. Trall. Oc. 1 (Puschmann, *Nachträge* 152.5–6) τοῦ καλουμένου σταφυλώματος πολλαί εἰσι διαφοραί. Similar phrases include e.g. in Aët. 7.2 ἡ λεγομένη δὲ μίλφωσις, ἡ δὲ γλαύκωσις λεγομένη (CMG VIII.2 255.13–14, 26).

9] τὸν ἀπό ε [ci. The condition mentioned in the next line and introduced by this heading belongs, according to ps.-Gal. Int. 16.1 (xiv 768.9 K. = 78.16 Petit), to the conditions affecting the πόροι of the eye, i.e. the optic nerves (Gal. *Caus. Synp.* 1.2 (vii 88.17–89.2 K.) = Heroph. T85 von Staden (p. 203); Orib. *Coll. Med.* 25.57.8 (CMG VI.2.1 84.8–11)). The optic nerve is described by expressions such as τὸ ἀπ' ἐγκεφάλου καταφερόμενον ἐπὶ τὸν ὀφθαλμὸν νεῦρον (Gal. loc. cit.) or ὁ διατείνων ἀπὸ τοῦ ἐγκεφάλου καὶ μῆνιγγος πόρος ἐπὶ τὸν ὀφθαλμὸν (ps.-Gal. Int. 16.11 (xiv 776.17–18 K. = 85.21–2 Petit)) or τὰ ἀπ' ἐγκεφάλου καταφερόμενα νεῦρα ἐπὶ τὰς χώρας τῶν ὀφθαλμῶν (Aët. 7.1 (CMG VIII.2 254.1–2)). See also Gal. *Nerv. Diss.* 2.2 (ii 832.6–11 K. = 27.4–10 Garofalo). We may then restore here ἐκ[ε]φάλου, then e.g. πόρον, perhaps preceded by a participle.

10–11] ἀπόρρηξις (l. ἀπόρρηξις) [ci. On the use of single rather than double ρ in ἀπόρρηξις, see Gignac, *Grammar* i 156. ἀπόρρηξις is the first of the conditions affecting the optic nerve mentioned by the *Introductio* (16.1 (xiv 768.9–10 K. = 78.16–17 Petit)), ἀπόρρηξις, παρέμπτωσις, σύμπτωσις, ἔλκωσις, ἀνθράκωσις; cf. Int. 16.11 (xiv 776.16–777.2 K. = 85.20–86.1 Petit). Two of these conditions, σύμπτωσις and παρέμπτωσις, are mentioned by Leo Med. *Syn.* 3.37–8 (149 Ermerins), while ἔλκωσις and ἀνθράκωσις are not usually associated with the optic nerves. Aëtius (7.2, 50 (CMG VIII.2 255.27–8, 304.13–15)) attributes ἀμαύρωσις to a paralysis, an obstruction of the optic nerve, or a thickening of the coats of the optic nerve; he also relates ἀμβλυωπία (7.49 (CMG VIII.2 303.9–12)), among other causes, to some changes in the optic nerve.

πρόπτωσις or πρόπτωμα, *prociencia*, usually designates either a protrusion of the uvea (*βραγοειδής*, often assimilated to the iris) through a wound or an ulcer of the cornea (e.g. Paul. Aeg. 3.22.22 (CMG IX.1 179.27–180.10)), or a prolapse of the entire eye (Aët. 7.26 (CMG VIII.2 272.20–27)), resulting from a violent blow to the head. According to Galen, *UP* 10.8 (iii 797.17–798.8 K. = ii 82.20–83.1 Helmreich), a prominent (*προπετέστερος*) eye results from a rupture of the muscle surrounding the optic nerve or of the optic nerve itself, or from a stretching of the optic nerve following a paralysis of the muscle that holds it. πρόπτωσις could perhaps have been used here to designate such a condition.

As *prociencia* can be the consequence of a violent inflammation that leads to a rupture of the eyeball (Cels. 6.6.1D, 6.6.8G (CML 1 259.14–17, 264.21–4)), one might perhaps restore ῥήξις] καὶ πρόπτ[ω]σις. Ps.-Alex. Trall. Oc. 1 (Puschmann, *Nachträge* 150.30–31), on ulceration of the tunics of the eye and *prociencia*, has the sequence ῥήξις τε καὶ πρόπτωσις.

Alternatively, one could suppose that ἀπόρρηξις was the only condition of the optic nerve mentioned. A new section would then have started after it, and πρόπτωσις would belong to that section. It could have been connected with the conditions affecting the whole eye, as those relating to the iris or cornea were listed earlier. One may supply e.g. περὶ δὲ τὸν ὄλον ὀφθαλμῶν; cf. ps.-Gal. Int. 16.1 (xiv 767.2 K. = 77.8 Petit), although there the conditions affecting the whole eye come at the beginning. But this is probably too long; cf. on fr. 2–3.

FR. 2–3

The left- and right-hand margins are not preserved, but fr. 2.3 as supplemented indicates that the questions were indented by the width of about five letters. The minimum extent of the loss on the right is given by the probable χ[εινώμενον] at fr. 3.10. The right-hand margin is not likely to have stood significantly further to the

right; cf. fr. 3.7–8 n. The line length will then have been about 13–13.5 cm. Cf. also fr. 2.1–2 n.

FR. 2

1–2 Question. The beginning of ps.-Gal. Int. 16.1 (xiv 767.2–4 K. = 77.8–10 Petit) provides the best parallel: πάθη δὲ περὶ μὲν τὸν ὄλον ὀφθαλμῶν συνίσταται τάδε: τάραξις, ὀφθαλμία, φλεγμονή, ἐπιφορά (Petit, cf. vet. lat.: ἐπιφορά, φλεγμονή codd.), οἰδημα, ἐμφύσημα κτλ. Cf. Ioan. Act. *Diagn.* 2.7 (444.2–3 Ideler); also Paul. Aeg. 3.22.2, 3 (CMG IX.1 171.16–172.25). Ps.-Alex. Trall. Oc. 1 (Puschmann, *Nachträge* 140.26–30) has ὀφθαλμία, χήμωσις, and τάραξις; similarly, Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 55) has τάραξις, ὀφθαλμία, and χήμωσις.

To judge by the assumed line length (fr. 2–3 n.), a further condition may have been lost at the end of line 1: κα[ὶ] τί ... καὶ τί. Perhaps it was ἐπιφορά; cf. ps.-Gal. Int. 16.1 (xiv 767.3 K. = 77.9 Petit). χήμωσις, not included here by ps.-Gal. Int., is less likely but not impossible; cf. also Aët. 7.5 (CMG VIII.2 257.13). But an additional definition would not be easy to accommodate in the space available at 8–9.

2 φλεγμονή. The supplement is not in doubt, as this is the only condition included in this category in the ps.-Galenic list that ends in η; cf. 9.

3ff. τάραξις and ὀφθαλμία. The presentation appears to be closest to that of Paul. Aeg. 3.22.2 (CMG IX.1 171.16–24), for whom τάραξις is short-lived and produced by external causes, while ὀφθαλμία is a sort of τάραξις but lasts longer and may be produced by internal (hidden) as well as external causes. For τάραξις, the remains of a description of the symptoms (3) and references to the duration of the condition (4) and its causes (5) can be recognized, and for ὀφθαλμία, the beginning of the description (6) and a reference to the causes (7); WBH suggests that we should expect the duration to be mentioned, either in the lacuna at 6–7, if the order of presentation was the same in each case, or after the causes. For detailed discussion, see the notes below.

3–6 Definition of τάραξις.

3 τάραξιν μὲν λέγουσιν ὅταν ὁ ὀφθαλμὸς [. Cf. ps.-Gal. Int. 16.2 (xiv 768.10–12 K. = 78.17–20 Petit) τάραξις μὲν ὄν ἐστιν ὅταν συγκληθεῖς ὁ ὀφθαλμὸς ἐπιπολαίως καὶ μετρίως ἐπὶ τὸ ἐρυθρότερον καταστῆ τελέως; Paul. Aeg. 3.22.2 (CMG IX.1 171.17–18) ἡ μὲν τάραξις ὑγρότης ἐστὶ τοῦ ὀφθαλμοῦ καὶ θερμότης σὺν ἐρεῦθει περιττῶ τοῦ κατὰ φύσιν.

4 ἐπὶ δύο ἢ τρεῖς ἡμέρας. Eye irritation is supposed to clear on its own after two or three days. This is implicit in Paul. Aeg. 3.22.2 (CMG IX.1 171.17–24), where ὀφθαλμία, as a worsening of τάραξις, lasts three to five days, while τάραξις itself λυεῖται χωριστῶς τῆς αἰτίας. Cf. also Aët. 7.3 (CMG VIII.2 256.4–20).

7 [. The final trace is an upright. WBH suggests τριῶν ὑπαρχόντων τῶν αἰτίων; cf. 5 n.

5 καπνῶν, κοιορ[τῶν]. The singular κοιορ[τοῦ] is less likely; the plural may denote different kinds of smoke and dust. These are listed among the causes of the disease by Orib. *Eur.* 4.13.1 (CMG VI.3 444.19–20) ὑπὸ τε καπνοῦ γινομένης καὶ ἐγκαύσεως ἢ κόνεως, ἢ ἀτενὲς ἐνιδόντων αὐγῆ, Aët. 7.3 (CMG VIII.2 256.4–6) ὑπὸ τε καπνοῦ γινομένης καὶ ἐγκαύσεως ἢ κοιορτοῦ ἢ τινος ἐτέρου παραπλησίου, and Paul. Aeg. 3.22.2 (CMG IX.1 171.18–19) ὑπὸ τινος ἔξωθεν αἰτίου γινομένης, οἶον ἡλίου, καπνοῦ, κοιορτοῦ, ἐλαίου; cf. Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 55.3–6). To judge from these passages, at least one more causative agent is likely to have followed. WBH suggests e.g. ἐγκαύσεων as the last of three causes (cf. 4 n.). The list will then be similar to those in Aëtius and Oribasius, except that the former adds ἢ τινος ἐτέρου παραπλησίου and the latter ἢ ἀτενὲς ἐνιδόντων αὐγῆ.

6–8 Definition of ὀφθαλμία. The surviving words do not correspond closely to other passages on this disease. Galen defines ὀφθαλμία as φλεγμονή τοῦ περιστίου τε καὶ περικρανίου καλουμένου χιτῶνος (*Comp. Med. Loc.* 4.3 (xii 711.8–9 K.)) and φλεγμονή ... τοῦ ἐπιπεφυκτοῦ ὑμένος τῶ κερατοειδεῖ (*Morb. Diff.* 13 (vi 876.18–877.1 K.); cf. *MMG* 2.1 (xi 77.13–14 K.)), and see Nutton on *De motibus dubiis* 8.14 (156.22 N.). For ps.-Gal. Int. 16.2 (xiv 768.12–13 K. = 78.20–79.2 Petit), ὀφθαλμία ... ἐστιν ὅταν τὸ λευκὸν ἐνερευθῆς ἢ καὶ τὰ βλέφαρα ἐπηρμένα μετὰ τοῦ τῆν τε μύσιν τῶν βλεφάρων ἐπαλγῆ εἶναι καὶ τῆν τῶν χειρῶν ἐπαφῆν ἐπώδυνον. Paul. Aeg. 3.22.2 (CMG IX.1 171.20–22) considers ὀφθαλμία an aggravation of τάραξις, and Ioan. Act. *Diagn.* 2.7 (444.11–12 Ideler) adds that it is caused by a light and acrid flow; for Hunayn ibn Ishāq, *Ten Treatises* 6

(Meyerhof (1928) 55.7–34), *ὄφθαλμία* is due either to a worsening of *τάραξις* or to an internal cause, i.e. 'a superfluity which flows down (from the head) into the conjunctival tunic and causes it to swell'. Cf. also Aët. 7.4 (CMG VIII.2 256.26–7).

For the possibility that another definition is to be accommodated before 9 *φλεγμονήν* δὲ λέγουσιν, see I–2 n.

6 *ὄφθαλμία* δέ: sc. *έστω*. Cf. Kühner–Gerth i 40ff. Less probably *λέγεται* is understood from the preceding *λέγουσιν*: cf. Mayser, *Grammatik* ii.3 4ff.

6–7 [ἐ]γγένηται: WBH suggests *τάραξις* as the subject (cf. Paul. Aeg. 3.22.2 (CMG IX.1 171.20–21) *καὶ ἡ ὄφθαλμία δὲ τάραις τίς έστω*), followed by a reference to the duration, e.g. *ἐπὶ πλείονας ἡμέρας*: cf. 3ff. n.

7 τῶν εἰν. Perhaps *ἐνδοθεν* or *ἐν τῷς ἡ* (τῶν) *ξέωθεν*, followed by *αἰτίων*, as the causes of *ὄφθαλμία* were thought to be internal as well as external. Cf. Alex. Trall. *Therap.* 2 (ii 5.5–15 P); Paul. Aeg. 3.22.2 (CMG IX.1 171.21).

8 *Ἰομενος*: e.g. *γιγόμενος* (or *γει-*: cf. fr. 3.14) may form part of a description of the state of the eye, agreeing with *ὄφθαλμός* or *ὕμη*.

9–10 Definition of *ὕμη*.

9 After *λέγουσιν*, probably *ὅταν*.

10 *ἐρυθρὰ ἡ*. Only ps.-Gal. *Int.* 16.2 (xiv 768.15–17 K. = 79.2–4 Petit) and *Def. Med.* 327 (xix 433.10–12 K.) give a precise description of *φλεγμονή* as an eye disease. In the first passage, the definition runs *φλεγμονή δέ έστω επί ταις τοῦ τε ἐρυθρήματος καὶ τῆς ἐπάρσεως τῶν βλεφάρων, ὡς ἐπιπίνως ἀναβλέπειν*, and in the second *φλεγμονή μὲν οὖν έστω οἴδημα περὶ τοὺς ὀφθαλμοὺς μετ' ἐρυθρήματος καὶ πολλῆς θερμασίας καὶ δυσκινησίας καὶ νυγμῶν γινόμενον*. We may restore e.g. *τὰ | βλέφαρα θερμὰ καὶ ἐρυθρὰ ἡ*.

Fr. 3

1–2 End of a definition. Cf. ps.-Gal. *Int.* 16.9 (xiv 775.4–11 K. = 84.7–14 Petit) *οὐλή δέ έστω ὅταν ἐπὶ τῷ μέλανι τοῦ ὀφθαλμοῦ ἐξ ἔλκουσ βαθέος ὄντος παχύτης ὕμενος ἐπιγένηται καὶ ἡ χροιά λευκότερα φαίνεται ... λεύκωμα δὲ ταυτὸν μὲν έστω οὐλή, διαφέρει δὲ τῷ ἐξ ἔλκώσεως μεγάλην (-ης WBH) οὐλήν μείζονα καὶ παχύτεραν ἐπιγενέσθαι ἐπὶ τῆς ἴρεως, ἣν καλοῦσι λεύκωμα. Perhaps e.g. οὐλάς μὲν λέγουσιν ὅταν ..., λευκάματα δὲ ὅταν ἐξ ἔλκώσεως μεγάλης μείζονες καὶ παχύτερα ἐπιγείωνται οὐλαί, ἅτε δὴ [λευκότερων διὰ τῆν | παχύτητ]α τοῦ ὕμενος τῶν μελάνων φαινομένων. For *ἐλκώσεως μεγάλης*, cf. Aët. 8.12 (CMG VIII.2 418.16); *μεγάλην οὐλήν μείζονα καὶ παχύτεραν* is transmitted in ps.-Galen, but word order and sense are both unsatisfactory' (WBH). On scats, cf. also Aët. 7.39 (CMG VIII.2 290.13–291.7); Paul. Aeg. 3.22.24 (CMG IX.1 181.1–20); Ioan. Act. *Diagn.* 2.7 (447.6–8 Ideler); Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 64.23–6); Magnus, *Augenheilkunde* 528–9; Hirschberg, *Geschichte* i 85–7.*

2 τῷ. E.g. τῷ [κερατοειδέ: cf. Aët. 7.39 (CMG VIII.2 290.14), where the cornea is mentioned; Gal. *Morb. Diff.* 13 (vi 876.18–877.1 K.) τοῦ ἐπιπεφυκότος ὕμενος τῷ κερατοειδέ. Cf. also I–2 n.

4–5 Definition of *βοθρίον*. Restore e.g. *κοῖλον καθ'αὐτὸν ἐλκῶδριον κεντήμα[σι] στρογγύλοισι | ὅμοιον, στένον*. Cf. esp. ps.-Gal. *Int.* 16.7 (xiv 774.7–9 K. = 83.17–19 Petit) *βοθρίον δέ έστω ἔλκος κοῖλον καθαρὸν, στενόν, κεντήμασι στρογγύλοισι ὅμοιον, βαθύτερον ἐλκῶδριον* (but cf. 4 n.); Aët. 7.29 (CMG VIII.2 274.20–21) *βοθρία μὲν καλεῖται ὅταν ἐπὶ τοῦ μέλανος γένηται κοῖλα καὶ στενά καὶ καθαρὰ ἔλκη κεντήμασιν ὅμοια*; also ps.-Gal. *Def. Med.* 333 (xix 434.6–7 K.); ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.7–8); Paul. Aeg. 3.22.21 (CMG IX.1 179.3–4); Leo Med. *Syn.* 3.30 (145 Ermerins); Ioan. Act. *Diagn.* 2.7 (446.20–22 Ideler); ps.-Sor. *Quaest. Med.* 349L Fischer; Erot. β 3 (28.4–5 Nachmanson); Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 64.15–16); Magnus, *Augenheilkunde* 525.

4 *ἐλκῶδριον*. Contrast ps.-Gal. *Int.* 16.7 (xiv 774.7–9 K. = 83.17–19 Petit) *βοθρίον δέ έστω ἔλκος ... βαθύτερον ἐλκῶδριον*. 'The *βοθρίον* is elsewhere said to be deeper than the *κοῖλον*: cf. Aët. 7.29 (CMG VIII.2 274.22–3), Paul. Aeg. 3.22.21 (CMG IX.1 179.4–5). So ps.-Galen probably wrote *βαθύτερον κοιλώματος*: we expect a contrast to be drawn with another particular kind, not quite generally and unhelpfully with "a small ulcer". *ἐλκῶδριον* may be an intrusive gloss' (WBH).

6–14 These four conditions (*ἄργεμον, νεφέλιον, ἀχλύς, ἐπίκαιμα*) appear in the same order in ps.-Gal. *Int.* 16.7 (xiv 773.17–774.7 K. = 83.8–17 Petit); ps.-Gal. *Def. Med.* 330–32 (xix 433.17–434.5 K.) has the sequence *ἄργεμον, νεφέλιον, ἐπίκαιμα*, with no separate entry for *ἀχλύς, νεφέλιον, ἀχλύς*, and *ἐπίκαιμα* are treated together in Aët. 7.27 (CMG VIII.2 273.18–274.12), and *ἄργεμον* in the following chapter (CMG VIII.2 274.13–19).

7–8 Definition of *ἄργεμον*. Restore e.g. *ἐλκῶδριον κατὰ τὸ μέλαν καὶ κατὰ μὲν [τὸ μέλαν λευκὸν | φαινόμενον, κατὰ] δὲ τὸ λευκὸν ὑπέρυθρον*. Cf. ps.-Gal. *Def. Med.* 330 (xix 433.17–18 K.) *ἄργεμόν έστω ἔλκωσις κατὰ μὲν τὸ μέλαν λευκὴ φαινομένη, κατὰ δὲ τὸ λευκὸν ὑπέρυθρος*; also Aët. 7.28 (CMG VIII.2 274.13–15) *ἄργεμόν έστι τὸ κατὰ τὸν τῆς ἴρεως κύκλον γινόμενον ἐλκῶδριον, ἐπειρηφὸς ὃ μὲν τὸ τοῦ λευκοῦ ὃ δὲ τὸ τοῦ μέλανος, λευκὸν φαινόμενον*; Paul. Aeg. 3.22.21 (CMG IX.1 179.5–7) *ἄργεμον δὲ τὸ ἐπὶ τοῦ τῆς ἴρεως κύκλου γινόμενον ἐπιλαμβάνον τι καὶ τοῦ περίε, ὥστε κατὰ μὲν τὸ ἔξω τῆς ἴρεως ἐνερευθὲς φαίνεσθαι, κατὰ δὲ τὸ ἔνδον λευκόν*; ps.-Sor. *Quaest. Med.* 346L Fischer; ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.17–20); Leo Med. *Syn.* 3.25 (141 Ermerins); Ioan. Act. *Diagn.* 2.7 (446.23–6 Ideler); Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 64.3–11); Magnus, *Augenheilkunde* 525; Marganne, *Ophthalmologie* 175; GMP II 5 iv 6–7 n.

10 Definition of *νεφέλιον*. Restore e.g. *ἐπιπόλαιον ἐλκῶδριον ἐπὶ τοῦ μέλανος γιγόμενον* (l. γιν-). Cf. Aët. 7.27 (CMG VIII.2 273.20–21) on the *ἀχλύς* (12 n.). On the *νεφέλιον*, cf. esp. ps.-Gal. *Def. Med.* 331 (xix 434.1–3 K.) *νεφέλιόν έστω ἀχλύς ἡ ἔλκωσις ἐπιπόλαιος ἐπὶ τοῦ μέλανος. ἡ νεφέλιόν έστω ἔλκος ἐπιπόλαιον καὶ μικρῷ μείζον ἄργεμόν καὶ λευκόν*; also ps.-Gal. *Int.* 16.7 (xiv 774.2–3 K. = 83.11–12 Petit) *νεφέλιον δέ έστω ἔλκος ἐπιπόλαιον καὶ μικρῷ μείζον ἄργεμόν καὶ λευκόν*; Aët. 7.27 (CMG VIII.2 273.23–5); ps.-Gal. *Rem. Parab.* 2.4.6 (xiv 411.8–9 K.); Paul. Aeg. 3.22.24 (CMG IX.1 181.2–3); ps.-Sor. *Quaest. Med.* 347L Fischer; ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.13–16); Leo Med. *Syn.* 3.26 (141 Ermerins); Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 63.33–5); Magnus, *Augenheilkunde* 524; Hirschberg, *Geschichte* i 86–7; Skoda, *Métaphore* 283–4.

12 Definition of *ἀχλύς*. Restore e.g. *οὐλή λεπτοτάτη παραπλησία ἀέρι ἀχλύδαι*; then perhaps e.g. *περὶ τὸ μέλαν* (possibly too long). Cf. ps.-Gal. *Int.* 16.7 (xiv 774.3–5 K. = 83.12–14 Petit) *ἀχλύς δέ έστω περὶ ὄλον τὸ μέλαν ἀπὸ ἐλκώσεως ἐπιπολαίου οὐλή λεπτοτάτη ἀέρι ἀχλύδαι παραπλησία*; Aët. 7.27 (CMG VIII.2 273.20–23) *ἡ μὲν γὰρ ἀχλύς ἐπιπόλαιός έστω ἔλκωσις ἐπὶ τοῦ μέλανος γιγόμενη, παραπλησία ἀχλύδαι ἀέρι τῷ χρώματι κυανώδης, πολλὴν τόπον ἐπέχουσα τοῦ μέλανος*; ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.10–12); Leo Med. *Syn.* 3.27 (143 Ermerins); Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 63.29–32); Magnus, *Augenheilkunde* 524; Hirschberg, *Geschichte* i 86–7. There is no entry for *ἀχλύς* in ps.-Gal. *Def. Med.*, where the term is used of a *νεφέλιον* (10 n.).

14 Definition of *ἐπίκαιμα*. Restore e.g. *κατὰ τὸ μέλαν γιγόμενον* (l. γιν-) *ἔλκος ἀκάθαρτον, ἐσχαρῶδες*. Cf. esp. ps.-Gal. *Def. Med.* 332 (xix 434.4–5 K.) *ἐπίκαιμά έστω ἔλκωσις ἐσχαρῶδης κατὰ τὸ μέλαν ἐπιγενομένη καὶ μὴ μένουσα*, Paul. Aeg. 3.22.21 (CMG IX.1 179.7–9) *τὸ δὲ ἐπίκαιμα ἔλκος έστι ῥυπαρὸν καὶ ἀκάθαρτον καὶ ἐσχαρῶδες, ὅπερ ἀκαθαρομένουσ πολλάκις ἐκρεῖ τὰ ἐν τῷ ὀφθαλμῷ ὑγρά*. As both authors use it, *ἐσχαρῶδες* may be preferable to *ῥυπαρὸν* (only in Paul) at the end; there is not likely to be room for both. Cf. also ps.-Gal. *Int.* 16.7 (xiv 774.5–7 K. = 83.14–17 Petit), Aët. 7.27 (CMG VIII.2 273.25–7), ps.-Sor. *Quaest. Med.* 348L Fischer, ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 148.21–6), Ioan. Act. *Diagn.* 2.7 (446.26–8 Ideler), Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 64.12–13); Magnus, *Augenheilkunde* 524–5.

16–17 Definition of *ὑπόπυον*. See the following notes for the reconstruction. Cf. esp. ps.-Gal. *Def. Med.* 338 (xix 434.17–18 K.) *πύωσις ἡ ὄνη έστί κυλλογή πύου κατὰ τὸ μέλαν μετὰ φλεγμονῆς πρὸς τῇ ἴριδι, παραπλησία ὄνη*, Paul. Aeg. 3.22.23 (CMG IX.1 180.12–14) *ὑπόπυος ὁ κερατοειδῆς ἐνίστε γίνεται ποτέ μὲν διὰ βήθους, ποτέ δὲ ἐπιπολής, ὄνη* προσεοικότος τοῦ πύου κατὰ τὸ στήμα· διὸ καὶ τὸ πάθος ὄνη παραπροαγορεύουσι (cf. ps.-Gal. *Rem. Parab.* 2.4.2 (xiv 409.9–12 K.) on the ὄνη); also Aët. 7.30 (CMG VIII.2 275.10–12) *πλείονος δὲ συστάντος πύου καὶ τὸ ἡμικυ τοῦ μέλανος ἀπολαβόντος ἡ καὶ δι' ὄλου τοῦ κερατοειδοῦς διαγωγῆς γενομένου, ὑπόπυον εἶναι λέγομεν τὸν ὀφθαλμόν*, ps.-Gal. *Int.* 16.8 (xiv 774.19–775.1 K. = 84.3–4 Petit), ps.-Sor. *Quaest. Med.* 354L Fischer, ps.-Alex. Trall. *Oc.* 1 (Puschmann, *Nachträge* 150.6–9), Leo Med. *Syn.* 3.29 (143 Ermerins), Ioan. Act. *Diagn.* 2.7 (447.2–5 Ideler), Hunayn ibn Ishāq, *Ten Treatises* 6 (Meyerhof (1928) 64–5.1–11); Magnus,

Augenheilkunde 526; Hirschberg, *Geschichte* i 85; Skoda, *Métaphore* 287–8; Marganne, *Ophthalmologie* 142–4.

16 ποίο ὕ' κυλλογή, 1. πύου κυλλογή. Cf. for the spelling Gignac, *Grammar* i 198–9 (oi for u), 169–70 (cynl- for cull-). κυλλογή πύου is used by ps.-Gal. *Def. Med.* 338 (xix 434.17–18 K.), quoted in 16–17 n. It is unclear what preceded: we might expect a description of the shape somewhere, but παραπλησία ὄνυχι and ὄνυχι προσοικυία are too long, while ὄνυχι ὁμοία or ὁμοία οἰκυία seems too short. 'Perhaps κατά τὸ μέλαν], a little more generously spaced than at the start of 14; cf. ps.-Gal. *Def. Med.*' (WBH).

διὰ τούτου κ]. We expect a reference to the black of the eye (μέλαν) or the cornea (κερατοειδής). WBH suggests emending to διὰ τοῦ κ[ερατοειδοῦς (the second του being due to dittography), or (preferably) δι' ὄλου τοῦ κ[ερατοειδοῦς; cf. Aët. 7.30 (CMG VIII.2 275.10–12), quoted in 16–17 n.

17] προσαγορεύουσι. Cf. Paul. Aeg. 3.22.23 (CMG IX.1 180.12–14), quoted in 16–17 n. Before it, e.g. τινὲς δὲ ὄνυχα] might fit the line beginning, but it is uncertain what preceded (cf. 16 n.).

M. HIRT

5242. THICKENINGS OF OILS

28 4B.61/G(4–5)b

6.1 × 17.8 cm

Second century
Plate III

The top of a column with parts of thirty lines, written along the fibres. The upper margin is preserved to a depth of 2.2 cm and the left-hand margin to a width of 0.3 cm. On the back, upside down in relation to the text on the front, an account with amounts in arouras and artabas.

The text is written in an informal hand, leaning to the right. δ has a broad base; η is h-shaped; κ has a curved lower arm descending from the middle of the upper arm. Cf. P. Palau Rib. 50, of 175, P. Fuad Univ. 19 (*GLH* 15b), of 145/6, and XXXVIII 2857, of 134.

A blank space marks the beginning of a new section (22). εἰ is written for long (19) and once exceptionally for short (13) ι. Iota adscript is not written (10, 20). Numerals are sometimes marked by supralinear bars: cf. 5, 16–17, 26, 28. Case endings are sometimes confused: cf. 4, 16–17 n.

The text gives three sets of instructions for thickening, the first stage in the preparation of perfumed oils. Each of the oils to be prepared is perfumed with flowers: iris (1–12), rose (13–22), and lily (22ff.). There are parallels in Dioscorides, noted in the commentary (cf. especially 1–12 n.), but the order in which the three oils are treated does not correspond to that of Dioscorides. If the order was alphabetical throughout, as in the preserved part, then the οἰνάνθιον and ναρκίσιον, both present in Dioscorides (I.46, 53 (i 44.20–45.2, 49.14–25 W.)), were not included. It is unlikely, in view of the differences, that the papyrus text was drawing on Dioscorides. It is more probable that the two authors have a common source. PSI inv. 3011 (MP³ 2388) is another papyrus text with close correspondences to Dioscorides: cf. 5224–6 introd.

A point of particular interest is the use of μήτια and ἄσαρα as units of weight: cf. 4–5 n.

ἄλλη στῦψις· ὀμφάκ[ινον
 ἔλαιον ἐκπλύνας π[ε-
 φρασμένον ὕδ[α]τι ο. [·
 ἔψε ξυλοβαλκάμω [μη-
 5 τίοις β ἄσάροις 5· εἴτ[α] ἔξε-
 λῶν τὸ ξυλοβάλαμ[ον
 προσέμβαλε καλάμ[ου
 κεκομμένου μήτια [·
 καὶ ζμύρνης χόνδρ[ον ἐν
 10 οἴνω παλαιῶ εὐώδει, [εἶτα
 ἀφελῶν ἀφήθησαν τ[ὸ] ἔ-
 λαιον. βρέχε ὡσαύτω[ς].
 στῦψεις ῥοδίνου· ἔλα[ινον
 ὀμφάκινον ἐκπλυνον
 15 ὦ[ς] αὐτως καὶ ἔψε με[τὰ
 σχοίνου μήτια β ἄσά[ροις
 δ εἰς τὸ ἥμισυ κεκο[μμέ-
 νοις καὶ πεφυραμέν[οις
 ὕδατι· ἔψε δὲ ἀνακειν[ῶν
 20 τῆ] χειρὶ καὶ ἀφήθη[σας
 χρω̄· πρὸς πολλὰ δὲ ἐ[φαρ-
 μόζει. ὕ στῦψις σουσίν[ου·
 ἔλαιον ὀμφάκινον [·
 πρώτην ἐκπλύνας ὕ[-
 25 δατ]ι ἔψε μετὰ καλάμ[ου
 μητίου ἄσάροις 5 εἰς τὸ
 ἥ]μισυ μέρ[ος] .[.] .[.] .[.]
 ἄσα[ρ] .[.] δ [·
 . α . [·
 30 .] . [·

2–3 l. πεφυραμένον 4 l. ξυλοβαλκάμου 7 l. προσέμβαλε 11 l. ἀπήθησαν 13 l. στῦψις
 16 l. μητίων β ἄσάρων 17–18 l. κεκομμένου καὶ πεφυραμένου 19 l. ἀνακινῶν 20 l. ἀπηθήσας
 26 l. ἄσάρων

'Another thickening: after cleaning oil of unripe olives mixed with water, boil with 2 *metia* 6 *asara* of Mecca balsam wood, then, after removing the Mecca balsam wood, add ... *metia* of chopped sweet flag and a lump of myrrh in aged, aromatic wine, then, after removing the oil, strain it. Steep in the same way.

'Thickening of rose oil: clean oil of unripe olives and boil with 2 *metia* 4 *asara* of camel grass chopped in half and mixed with water. Boil while swirling by hand and after straining, use. It is suitable for many purposes.

'Thickening of lily oil: after cleaning oil of unripe olives ... first with water, boil with 2 *metia* 6 *asara* of sweet flag ... to half ... 4 *asara* ...'

1-12 Iris oil. Dsc. 1.56.2 (i 52.6-14 W.), in a chapter headed *ἰρίνου ἐπιψικ* (i 51.25 W.), gives the following (overlaps underlined): οἱ δὲ ἐλαίου λίτρας ἐννέα οὐγγίας πέντε, ξυλοβαλάκιον λίτρας πέντε οὐγγίας δύο κόψας, ὡς εἴρηται, κόψασθε· εἶτα ἐξελών τὸ ξυλοβάλακιον προσέμβετε καλὰ μὲν κεκομμένον λίτρας ἐννέα οὐγγίας δέκα, ἐμύρνης χόδρον οἶνον παλαιῶν ἐμβρέχων εὐώδει, εἶτα λαβὼν ἐκ τοῦ ἐστυμμένον ἐλαίου καὶ ἡρωματισμένον λίτρας δέκα τέσσαρας ἐναπόβρεχε ἕως κεκομμένης ἴσον τῷ σταθμῷ κτλ. The papyrus has nothing corresponding to κόψας, ὡς εἴρηται at the start, and it specifies that the olive oil to be employed is washed oil of unripe olives, as in the other two sets of instructions (13-14, 23-4). Then ἀφελών ἀφήθῃσιν (l. ἀπήθῃσιν) τ[ὸ εἶ]λαιον (11-12) does not correspond to anything in Dioscorides' instructions here, but cf. for the expression Dsc. 1.53 (i 49.19-20 W.) ἐξελών ἀπήθει τὸ ἐλαίον ψυγέιν. The steeping is not described (12 n.). Otherwise the correspondence is close. On the units employed, cf. 4-5 n.

For other recipes for iris oil, cf. Aët. 1.130 (CMG VIII.1 64.21-65.3), Paul. Aeg. 7.20.29 (CMG IX.2 388.5-10).

1 ἄλλη ἐπιψικ. The corresponding set of instructions in Dioscorides is also presented as an alternative to another set (1-12 n.).

2-3 π[ε]φραμένον, l. πεφυραμένον. Contrast πεφυραμεν[] written correctly at 18. WBH would prefer to delete the participle (cf. 24-5), suggesting that it is due to an untimely and imperfect reminiscence of a phrase that will have been common in such recipes, as at 18-19.

3 ο. []. At the end, high and low traces on the edge in an abraded context. WBH suggests ὄμ[ο]υ.

4-5 [μ]η[]τρικ β ἀκάροις 5. These units are unfamiliar. They are used again at 8, 16, 26, and 28. Epiphanius, *De mensuris et ponderibus*, states (according to Greek and Syriac versions) that there are 6,000 λεπτά in a talent, the λεπτά being called ἀκάραι (lines 773-4 in E. D. Moutsoulas, *Θεολογία* 44 (1973) 196; J. E. Dean (ed.), *Epiphanius' Treatise on Weights and Measures: The Syriac Version* (1935) § 45; cf. also P. de Lagarde, *Symmicta* i (1877) 224.40-47; M.-J. van Esbroeck (tr.), *Les Versions géorgiennes d'Épiphanie de Chypre, Traité des poids et des mesures* (1984) § 45; M. E. Stone, R. R. Ervine (edd.), *The Armenian Texts of Epiphanius of Salamis De mensuris et ponderibus* (2000) VIII.1). But we have ἀκάροις here, not ἀκαρίους. ἀκαρου appears to be found before a numeral in P. Ness. III 92 (c. 685) at 14, 25, and 27, but the reading is uncertain, and in any case the word 'clearly refers to men and perhaps denotes a trade or profession' (14 n.). The μάτιον is a unit of dry measure, while the μήτιον here is a unit of weight. WBH tentatively suggests that ἀκαρον and μήτιον are private weight units devised by a particular practitioner for his own use, the names being those of medicinal plants, ἀκαρον and μήδιον.

'It is worth while to compare the quantities given in the papyrus with those given by Dioscorides in the corresponding sets of instructions:

a. 4-5: 2 μη. 6 ἀκ. pap.; 5 lb 2 oz Dsc.

b. 8: [?] μη. ο ἀκ. pap.; 9 lb 10 oz Dsc.

c. 16-17: 2 μη. 4 ἀκ. pap.; 5 lb 8 oz Dsc.

d. 26: <?> μη. 6 ἀκ. pap.; 5 lb 10 oz Dsc.

e. 28: ο μη. 4 ἀκ. pap.; ο lb 5 oz (or: 5 dr) Dsc.

Since Dioscorides has a larger quantity in c than in a, while the papyrus has a larger quantity in a than in c, it is not possible to establish exact values on the basis of this evidence. But to judge from a and c, the μήτιον may have been equivalent to approximately 2-2.5 lb. The figure to be supplied in line 8 (b) may then be 4 or 5 (δ or ε), and a quantity in the region of 5 oz could be obtained in e by supposing that there are 12 or more ἀκαρα to

a μήτιον. The quantity given by the papyrus in line 26 (d) may be too low: perhaps μητίου should be emended to μητίων β' (WBH).

5-6 ἐξελ[]λών: so Dioscorides. ἀφελ[]λών is also possible.

8 μήτια []. Cf. 4-5 n.

9 ἐν restored to account for the following dative: cf. ἐμβρέχων in Dioscorides.

10 [ε]ἶτα restored from Dioscorides.

11, 20 ἀφήθῃσιν, ἀφήθῃσα[]. For false aspiration in composition, see Gignac, *Grammar* i 136-8.

12 ὡσαύτω[]: sc. as in the previous set of instructions, where details were perhaps provided. Dioscorides postpones the description of the steeping to 1.56.2 (1-12 n.), and has a reference forward at the end of the first set of instructions at 1.56.1 (i 52.3-5 W.).

13-22 Rose oil. Dioscorides' instructions (1.43 (i 42.7-43.18 W.)) begin similarly: ῥοδίνου κκευασία· χχοί-νου λίτρας πέντε οὐγγίας δικοι, ἐλαίου λίτρας εἴκοσι οὐγγίας πέντε κόψας καὶ φυράσας ἐν ὕδατι εἴθε ἀναικίων, εἶτα ἀπηθῃσας εἰς τὰς εἴκοσι λίτρας καὶ οὐγγίας πέντε τοῦ ἐλαίου βάλει ῥόδων ἀβρόχων ἀριθμῶ χιλίων τὰ πέταλα κτλ. The instructions in the papyrus break off at the end of the thickening stage, just before rose petals are added. Other recipes for rose oil are given at Aët. 1.113 (CMG VIII.1 58.1-59.9) and Paul. Aeg. 7.20.4 (CMG IX.2 382.9-15).

14 ἐκπλυ[]νον: the use of καί before εἴθε (15) suggests that the imperative should be restored, rather than the aorist participle as at 2 and 24.

16-17 μήτια β ἀκάροις [] δ, l. μητίων β ἀκάρων δ. Cf. 4-5 n. μήτια may be due to the influence of 8 μήτια, the last use of the word. ἀκάροις is restored to account for the dative plural endings in 17-18 κεκο[μ]μέ[]νοι καὶ πεφυραμέν[]οις (l. κεκομμένον καὶ πεφυραμένον). Again, it may be due to the influence of the last use of the word (5). The switch from accusative to dative would not have troubled the writer: cf. 26 μητίου ἀκάροις (l. ἀκάρων) 5.

19 εἴθε δέ repeats the instruction given at 15. This awkwardness is avoided by Dioscorides in his instructions.

20 τῆ χερύ. The specification is not present in the corresponding place in Dioscorides, but cf. Dsc. 1.43.1, 1.43.2, 1.52.2 (i 42.11, 42.22-23, 48.12 W.).

22ff. Lily oil. Cf. the opening of Dsc. 1.52 (i 47.15-17 W.): σουκίνου κκευασία ... ἐλαίου λίτρας ἐννέα οὐγγίας πέντε, καλὰ μὲν λίτρας πέντε οὐγγίας δέκα, ἐμύρνης δραχμὰς (v.l. οὐγγίας) πέντε φυράσας οἶνον εὐώδει εἴθε. There are other recipes in Aët. 1.116 (CMG VIII.1 60.1-18) and Paul. Aeg. 7.20.7-8 (CMG IX.2 383.1-21).

23-4 Perhaps [μ]η[]τρικ β ἀκάροις, 'first': cf. LSJ s.v. πρότερος B.III.1.

24-5 ἐκπλύναι ὅ[]δατ[]ι. Cf. 2-3. If the supplement is correct, line 24 will have been rather shorter than expected, but a filler may have been used.

26 μητίου ἀκάροις (l. ἀκάρων) 5. Cf. 4-5 n.

26-8 'εἰς τὸ [] μιν μέρ[]ος (26-7) corresponds in its position to εἰς τὸ ἡμιν κεκο[μ]μέ[]νοι (17-18). Then the quantity ἀκάροις δ [] (28) will have been preceded by the name of the ingredient in question. Dioscorides has in this place ἐμύρνης δραχμὰς (v.l. οὐγγίας) πέντε. The quantity given in the papyrus is also comparatively small: no *metia*, and only four *asara*. Perhaps [] ζ[]μ[]ψ[]ρνης is to be supplied after μέρ[]ος. It seems compatible with the traces, a high crossbar followed at an interval by another trace at letter-top level. In that case, the participle κεκομμένον will need to be understood with εἰς τὸ [] μιν μέρ[]ος. For such ellipses, cf. Mayser, *Grammatik* ii.3.9' (WBH).

28 ἀκα[]ρ[] . Cf. 4-5 n. 'Perhaps ἀκάροις, since the unit always appears (or seems to have appeared: cf. 16-17 n.) in the dative plural, whatever the requirements of the context' (WBH).

5243. RECIPES FOR COLLYRIA

26 3B.51/H(4-5)a

24 × 18.3 cm

Second/third century
Plate IX

On the back of an account of payments in grain, the upper parts of three columns, with the text running in the same direction as that on the front. The upper margin is preserved to a depth of 1.9 cm. The intercolumnia are about 0.8–1.7 cm wide, and the left-hand side of the right-hand margin is preserved at the level of iii 18. A column can be up to about 9.8 cm wide and each line holds about 25 letters.

The text is written in a semi-cursive hand comparable to that of LI 3614 of 200. Each recipe begins on a new line with paragraphus above and with its first line projecting into the left-hand margin. Cf. for the system P. Ryl. III 531 (MP³ 2418), SB XXVIII 17134 (PSI X 1180, MP³ 2421), and LXXIV 4975 (MP³ 2410.111), all written in similarly wide columns. Symbols are used for measures, and *πρός* is represented by the monogram Π; cf. iii 22 (cχ for *χηκτοῦ*). Final *-ης* is sometimes represented by a raised *ς* (ii 6, etc.), and there are many examples of abbreviation with suspension, e.g. *κολλυρί* consistently for *-ον* (ii 1, etc.). See in general I. Andorlini, 'Il "gergo" grafico ed espressivo della ricettazione medica antica', in A. Marcone (ed.), *Medicina e società nel mondo antico* (2006) 142–67.

The scribe has corrected a phonetic spelling at ii 9 (*παλεον* for *παλαιόν*) by deleting *ε* with an oblique cancel stroke and inserting *αι* above the line. There are numerous itacistic spellings, and other uncorrected errors of various kinds at ii 11, 13, 17, and perhaps iii 15 and 17 (see comm.).

The text consists of a series of medical recipes all designated or identifiable as collyria, eye salves. The ingredients would be blended, dried, and stored as desiccated sticks. When required, a piece of a stick would be broken off, ground up together with a liquid such as water or milk, and applied. Galen has a similar collection of recipes, taken from Asclepiades Pharmacion, in *Comp. Med. Loc.* 4.7 (xii 730.7–790.9 K.). The work represented here, if it was not concerned only with eye medicine, may have been arranged, like *Comp. Med. Loc.*, according to the part of the body to be treated. The titles generally begin with *κολλύριον* (ii 1, 4, 9, 15, 19, iii 1, 8, 18). In a few cases, an adjective is used, with *κολλύριον* present or understood (*ὄξυδερκές*: iii 1, 5 (*ἄλλο ὄξυδερκές*); 13; *στατικόν*: 18; *μήλων*: 21). There is one proper name (iii 21 *Θερμουθάριον*), and in one case a distinctive ingredient is highlighted (iii 1–2 *τὸ διὰ τοῦ πηγ[γά]λ[ου]*). Abbreviation is in evidence at ii 19, where it is simply noted that the collyrium in question *ἔσχεν πολλήν [π]ρογραφήν*. In many cases, the specific conditions against which the collyrium is effective are added, introduced by *πρός* (ii 1, 4–5, 9–10, 15, 20, iii 8–9, 13–14; cf. i 10–11, 14–15). The recipes proper are in list form, with no directions included, except at i 1 and ii 27. Quantities are given in drachmas and obols, except that for pepper, a number of peppercorns is specified in two places (iii 4, 17).

Several variants are noted. At ii 7 and 18, an alternative quantity is introduced by *οἱ δέ*, as at P. Mich. XVII 758 D 14 (MP³ 2407.01). An additional ingredient found in another source is twice placed at the end of a recipe, introduced by *οἱ δὲ καί* (iii 11) or *ἄλλοι καί* (iii

17). Cf. *ἄλλοι δέ* in P. Strasb. gr. inv. 90 I' D 13 (i 1 n. below); SB 17134 fr. L.3, perhaps *οἱ δέ* (*ε*) *καὶ μάλα* [*βαθρον* or *μάλα* γμ-; GMP I 11 fr. A.12 n.; BKT X 24.12 n.]. The recipes in Galen use phrases such as *οἱ δέ*, *ἔνιοι δέ*, and *τινές δέ καί* in a similar way; cf. e.g. C. Fabricius, *Galen's Exzerpte aus älteren Pharmakologen* (1972) 112–14, on the use of *οἱ δέ* and *ἔνιοι δέ* in Galen's sources. In two small sheets containing single recipes, it is not stated that an alternative quantity is taken from a different source: in SB XIV 12086.3–4 (MP³ 2379.2), a dash separates the alternatives (cf. L. C. Youtie, *ZPE* 23 (1976) 124–5), and in LXXIV 4976 (MP³ 2410.112), they are added between the lines (cf. 1a, 2a n.). Cf. P. Ryl. 531.17 *ἀμύγδαλα π[ικρά] γ̄ ἢ δ̄* (I. Andorlini, *AATC* 46 (1981) 39). The variant quantities at ii 7 and 18 in the present text may both be due to scribal error in part of the tradition: in the former case, the *ἡμωβέλιον* sign may have dropped out, and in the latter, the triangular letters *α* and *δ* may have been confused. Galen notes the danger of corruption to which indications of quantity are exposed when they are not written out in full: cf. *Ant.* 1.5 (xiv 31.9–16 K.); S. Vogt, in T. Fögen (ed.), *Antike Fachtexte / Ancient Technical Texts* (2005) 68–70.

Col. i

			ἦ] χρῆσις διέ[
] . . . [
			] <i>ς</i> (δρ.) κ̄, . . . [
			χ] <i>αλκοῦ κεκα</i> [<i>υ</i>
5			(δρ.)] γ̄, ἀλόης (δρ.) . [
			] <i>ειο</i> (<i>υ</i>) (δρ.) <i>ᾱ</i> , . . . [
			νά] <i>ρδου</i> (δρ.) <i>ᾱ</i> , . . . [
			] (<i>τριώβολον</i>), <i>κόμμεω</i> (<i>ς</i>)
			ῥ] <i>δωρ</i> .
10			τ] <i>ἀ λεπτά ῥεύ-</i>
	ματα		ψ] <i>ιμιθεί</i> (<i>υ</i>) (δρ.) δ̄,
			] <i>Κιλικέ</i> :[<i>ο</i> (<i>υ</i>)] (δρ.) ζ̄,
			] ῥδωρ.
			] <i>νεις ὀφθαλ-</i>
15	μ		] . . . ] . . . ] τ . . .
		ζ = δραχμή, δραχμαί	6] <i>εἰ</i>
		12 I. Κιλικίου	13 ῥδωρ
		8 Γ = τριώβολον	κομμῆ
		11 ψ] <i>ιμιθεί</i> , I. ψιμθίου	

Col. ii

κολλύριον(ν) πρ(ός) [...]λου (δρ.) β, [...] δ[ό]τιο[υ] (τετράβολον), κ[...] (δρ.) β, κόμμε[ω]ς (δρ.) β, ὕδωρ.
 5 κ[ολλ]ύριον(ν) πρ(ός) ἀμ[βλυω]πίαν καὶ πτε-
 ρύγια· λίθον αἰ[ματί]τον (δρ.) β, ἀμμο-
 νιακ(οῦ) θυμιάματ(ος) (δρ.) γ, ζμύρν(ης) (δρ.) δ, σαγα-
 πήνου (δρ.) β, οἱ δὲ (δρ.) β (ἡμωβέλιον), εὐφορβείου (διώβολον),
 κόμμεω(ς) (δρ.) β, ὕδωρ.
 10 κολλύριον(ν) πρ(ός) βένυμα παλλ[ε]αί[ον] καὶ πρόσ-
 φατον· σκωρέας μολεῖβου πεπλυ-
 μένου (δρ.) β, ἀμύλου (δρ.) β, ψιμι[θ]είου(ν) (δρ.) β,
 στείμω(ς) (δρ.) α (τριώβολον), λεπίδος χαλκοῦ(ν) (δρ.) α, ὀπίου
 (δρ.) α, γάρδου Κελ(τ)ικ(ῆς) (δρ.) α, κόμμεω(ς) (δρ.) γ, ῥό-
 δ[ω]ν(ν) ξηρῶν (δρ.) β, ὕδωρ ὄμβρειον.
 15 κολλύριον(ν) πρ(ός) πάντα [...] δ () (δρ.) δ, χαλκοῦ(ν) κε-
 καυμ(ένου) (δρ.) β, ζμύρν(ης) στακτ(ῆς) (τριώβολον), κ[ρ]όκου (τριώβολον),
 ὀπίου πεφωσμένον(ν) (δρ.) α, ἀκακία(ς) (δρ.) α,
 οἱ δὲ (δρ.) δ, κόμμε[ω]ς (δρ.) β, ὕδωρ ὄμβρειον.
 20 κ[ολλ]ύριον(ν) ὃ ἔσχεν πολλήν [π]ρογραφήν
 [...] ὀφθαλμῶν νόσον ἀμύλου
 (δρ.) β, [...] (δρ.) β, στείμω(ς) Κοπι-
 κοῦ (δρ.) β, [...] (δρ.) δ, κ[α]δμείας [π]ηλυμ(ένης)
 (δρ.) β, [...] (δρ.) α, γάρδου (δρ.) α, [...]
 [...] (δρ.) α, ὀπίου (δρ.) α, ζμύρν(ης) (δρ.) β.
 25 λεπίδο(ς) χαλκοῦ(ν) (τετράβολον), [...]
 [...] ἀλικακκάβου(ν) (δρ.) α, [...]
 [...] β, τὰ ξηρὰ [...]
 [...] α [...]
 [...] [...]

ζ = δραχμή, δραχμαί 1 κολλύριον 1, 4, 9, 15 β 2, 25 β = τετράβολον 4 κ[ολλ]ύριον
 6 νιόθυμια 6, 16 ζμυρνί 7 σ = ἡμωβέλιον 1. εὐφορβίου ζ = διώβολον 9 κολλύριον
 10-11 1. σκωρίας μολεῖβου πεπλυμένης 11 ψιμι[θ]εί, 1. ψιμιθίου 12 στείμω, 1. στίμω(ς) χαλκ
 12, 16 Γ = τριώβολον 13 κελικ^ς κομμῆ 14, 18 ὕδωρ 1. ὄμβριον 15 κολλύριον
 χαλκ^ς 16 στακτ^ς 17 πεφωσμεν^{ος} 19 κ[ολλ]ύριον 21 1. στίμω(ς) 22 π[η]λυμ^{ος}
 25 λεπίδοχαλκ^{ος} 26 ἀλικακκάβ^{ος}

Col. iii

κολλύριον(ν) ὀξυδερκές τὸ διὰ τοῦ πηγά-
 νου πηγάνο(ν) ἀγρίου σπέρματ(ος) (δρ.) β, ...
 (δρ.) β, κρόκου μάγματ(ος) (δρ.) δ, πεπερέω(ς)
 κ[ό]κκοι ν, κόμμεω(ς) (δρ.) β, ὕδωρ.
 5 ἄλλο ὀξυδερκές[ε] ἀλ[ό]γη(ς) (δρ.) δ, πιπέρεω(ς) [(δρ.) β]
 ἄλ[ο]ς ἀμμο[ν]ιακοῦ(ν) (δρ.) β, ζμύρν(ης) [(δρ.) β],
 κόμμεω(ς) (δρ.) δ, ὕδωρ.
 10 κολλύριον(ν) πρ(ός) ἀρχομένας ὀφθαλμιά[ς] κ[αὶ]
 λεπτόν ρεῦμα καὶ ἔλ[κ]η[ς] καδμείας [(δρ.) β],
 ψιμιθ[ε]ίου(ν) (δρ.) δ, ὀπίου [...] [...]
 κόμμεω(ς) (δρ.) α, ὕδωρ ὄμβρειον, οἱ δὲ καὶ [...]
 κρόκου μάγματ(ος) (δρ.) β, [...] [...]
 15 ὀξυδ[ε]ρκές πρ(ός) ἀ[πο]νομάζουσι ν ὑπο-
 χύματα οὐλὰς ἀμβλυωπία[ς] σπο-
 δοῦ (δρ.) δ, πηγάνο[ν] ἀγρίου σπέρματ(ος) (τριώβολον), [...]
 κρόκου (τριώβολον) καὶ μάγματ(ος) (δρ.) δ, πεπερέω(ς) [...]
 κ[ό]κκοι ν, ἄλλοι καὶ ἡμέρου σπέρματ(ος) (δρ.) β, [...]
 20 κολλύριον(ν) στακτόν καδμείας (δρ.) δ, ἐρί-
 κης καρποῦ (δρ.) α, ὀπίου (δρ.) α, ἀκακία[ς] (δρ.) β,
 ζμύρν(ης) (τριώβολον), κόμμεω(ς) (δρ.) β, ὕδωρ ὄμβρειον.
 μήλων Θερμουθάριον καδμείας (δρ.) β,
 λίθου σχι(στοῦ) (δρ.) α, ὀπίου ὀπτοῦ (διώβολον), κρόκου
 (δρ.) β, [...] [...] [...], κόμμεω(ς) (δρ.) β (τριώβολον), ὕδωρ.

ζ = δραχμή, δραχμαί 1 κολλύριον 2 πηγάνο σπέρμα 3 μάγματ 4, 7, 11, 20 ὕδωρ
 7 κομμῆ 8 κολλύριον 8, 13 β 10 ψιμιθ[ε]ίου, 1. ψιμιθίου 11 κομμῆ 15 σπέρμα
 15, 16, 20, 23 Γ = τριώβολον 16 μάγματ πεπερέ 17 σπερ 18 κολλύριον 18-19 1. ἐρείκη
 20 ζμυρνί κομμῆ 1. ὄμβριον 22 σχ ζ = διώβολον 23 κομμῆ

'... use with ...
 '... 20 dr., ... burnt copper ..., ... 3 dr., aloe ... dr., ... castoreum (?) 1 dr., ..., spikenard 1 dr., ... 3 ob.,
 gum arabic ..., water.
 '... light secretions ... white lead 4 dr., ... Cilician ... 6 (?) dr., ... water.
 '... weak (?) eyes ...
 'Collyrium against ... starch (?) 6 dr., ..., poppy juice 4 ob., saffron (?) 2 dr., gum arabic ... dr., water.
 'Collyrium against dim-sightedness and pterygia: haematite 6 dr., ammoniac incense 8 dr., myrrh 4 dr.,
 sagapenum 2 dr., others (have) 2 dr. ½ ob., spurge juice 2 ob., gum arabic 6 dr., water.
 'Collyrium against old and new rheum: washed lead dross 6 dr., starch 6 dr., white lead 6 dr., antimony
 oxide 1 dr. 3 ob., copper flakes 1 dr., poppy juice 1 dr., Celtic spikenard 1 dr., gum arabic 3 dr., dried roses 2 dr.,
 rainwater.
 'Collyrium against all: ... 4 dr., burnt copper ... dr. (?), oil of myrrh 3 ob., saffron 3 ob., roasted poppy

juice 1 dr., acacia 1 dr., others (have) 4 dr., gum arabic ... dr., rainwater.

'Collyrium which had a long title, ... disease of the eyes: starch ... dr., ... dr., Coptic kohl ... dr., ... 4 dr., washed calamine ... dr. (?), ... 1 dr., spikenard 1 dr., ... 1 dr., poppy juice 1 dr., myrrh ... dr. (?), copper flakes 4 ob., ..., *halikakkabon* 1 dr., ... 2 ..., the dry ingredients ...

'Sharp-sighted collyrium, the one with rue: seed of wild rue ... dr., ... 2 dr., sediment of saffron oil 4 dr., 50 peppercorns, gum arabic 10 dr., water.

'Another sharp-sighted (collyrium): aloe 4 dr., pepper ... dr. (?), salt of Ammon 2 dr., myrrh ..., gum arabic 4 dr., water.

'Collyrium against incipient ophthalmias and light rheum and sores: calamine ... dr. (?), white lead 4 dr., poppy juice ..., gum arabic 1 dr., rainwater; others also sediment of saffron oil ... dr.

'Sharp-sighted (collyrium) against what they call cataracts, scars, dim-sightedness: zinc ash 74 dr., seed of wild rue 3 ob., saffron 3 ob. and sediment of saffron oil 4 dr., 50 peppercorns; others also seed of cultivated (rue) 2 dr. ...

'Stopping collyrium: calamine 4 dr., erica seed-pod 1 dr., poppy juice 1 dr., acacia ..., myrrh 3 ob., gum arabic 2 dr., rainwater.

'Quince-yellow (collyrium) Theriaca: calamine ... dr. (?), fissile stone 1 dr., roasted poppy juice 2 ob., saffron ... dr. (?), ..., gum arabic ... dr. 3 ob., water.'

Col. i

1 η] χρῆσις δι' ἢ χρῆσις δι' ψοῦ is by far the commonest such expression. Alternatively e.g. δι' [α (τοῦ) γάλακτος or δι' [ὑδατος may be considered, but hardly δι' [ῥῆσις (Gal. *Comp. Med. Gen.* 5.11 (xiii 827.17 K.), not a collyrium). Cf. P. Strasb. gr. inv. 90 (MP³ 2379) F D 13-14 (Kalbfleisch, *Pap. argent. gr.* 5), where the editor suggests ἢ χρῆσις δι' ψοῦ, ἄλλοι δὲ δι' οἴ[νου χρῶνται ἢ] δι' ὑδατος. WBH supplies e.g. ὑδωρ or ὑδωρ ὀμβρειον before, as regularly at the ends of recipes in this papyrus, comparing e.g. Gal. *Comp. Med. Loc.* 4.7 (xii 746.13 K.) ὑδωρ ὀμβριον, ἢ χρῆσις δι' ψοῦ, LXXIV 4977 1-2 ὑδωρ, χρ(ῶ) | μεθ' ὑδατος, and for a fuller version e.g. Gal. *Comp. Med. Loc.* 4.7 (xii 745.14 K.) ὑδατι ὀμβρίω ἀναλάμβανε καὶ χρῶ δι' ψοῦ.

2] : a trace on the edge, 'perhaps the end of an additional ingredient found in another version of the recipe, as at iii 11-12, 17' (WBH).

3-9 The blank space at the end of line 2 indicates the beginning of a new recipe. 'The recognizable ingredients and the length of the recipe would suit the *μαλαβάθρινον*: cf. e.g. GMP II 8 with commentary. I propose e.g.

μαλαβάθρινον· καδμεία]ς (δρ.) κ̄, ψιμί-
θειό(υ) (δρ.) , , στείμεω(ς) (δρ.) , , χ]αλκοῦ κεκα[υ-
μένου (δρ.) , , κρόκου (δρ.)] γ̄, ἀλόης (δρ.) . [,
ζιμύρν(ης) (δρ.) , , καστο]ρείο(υ) (δρ.) ᾱ, ἀκ[α-
κίας (δρ.) , , ὀπίου (δρ.) , , νά]ρδου (δρ.) ᾱ, λυ[-
κίου (δρ.) , , μαλαβάθρο(υ) (δρ.)] (τριώβολον), κόμμεω(ς)
(δρ.) , , ἄλλοι δὲ (δρ.) , , ὕ]δωρ. (WBH).

3 . . . [: damaged traces, the first a high crossbar.

4 χ]αλκοῦ κεκα[υμένου. The participle may but need not have been abbreviated. If it was written in full, it will have been divided before -μένου. Burnt copper is common in collyria: cf. e.g. GMP I 14.1 n., II 5 ii 7 n.

5 ἀλόης. *Aloe vera* L. This ingredient is also found at iii 5. Cf. GMP I 11 fr. A.13 n.

6] : the right-hand edge of a small circle high in the line.]ρ is likely, so καστο]ρείο(υ) rather than ψιμί]θειό(υ): the list of mineral ingredients will in any case have finished before ἀλόης in the previous line. On castoreum, cf. GMP II 8 introd. (p. 132); S. Barbara, "Castoreum et basilic, deux substances animales de la pharmacopée ancienne", in I. Boehm, P. Luccioni (edd.), *Le Médecin initié par l'animal* (2008) 121-48' (WBH).

[: 'ακ[seems probable. The traces include much of the loop and tail of α and the upper branch of κ' (WBH).

7 νά]ρδου. Spikenard (*Nardostachys jatamansi* DC). Dsc. 1.7.4 (i 12.17-21 W.) notes that it is used in eye remedies. *νάρδος* is also included at ii 13 (Celtic spikenard; see n.) and 23. Cf. also 5253 1 n.

[: the first λ (cf. 3-9 n.) or χ.

8 κόμμεω(ς). Gum arabic was used in collyria as an agglutinant, but was also held to have therapeutic benefits: cf. Cels. 6.6.3 (CML I 262.4-6), Dsc. 1.101.3 (i 93.22-4 W.); GMP I 14.8 n., II 4 ii 6 n. It is normally the last ingredient mentioned before water in the recipes in this compilation, as often in collyrium recipes: cf. e.g. LXXIV 4977 1; Paul. Aeg. 7.16.2 (CMG IX.2 335.2-3); L. C. Youtie, in J. Bingen et al. (edd.), *Le Monde grec. Hommages à Claire Préaux* (1975) 561. Here, as at ii 13-14, there appears to have been one more ingredient. 'Or perhaps the space at the start of line 9 was taken up by the quantity and an alternative quantity: cf. 3-9 n.' (WBH).

10-11 τ]ὰ λεπτά ρεῦ[ματα. A new recipe evidently begins in line 10.]α will represent τ]ὰ (WBH, comparing PSI Congr. XXI 3 ii 9-10 (MP³ 2419.2) *πρὸς τὰ λεπτά | ρεύματα*, Aët. 7.65 (CMG VIII.2 317.8) *τῶν πρὸς τὰ λεπτά ρεύματα ἀρμωσττότων κολλυρίων*); *πρ(ός)* will have appeared earlier in the line. Cf. also iii 8-12 below, a recipe said to be effective against *λεπτὸν ρεῦμα* (9); VIII 1088 8-9, a collyrium *πρὸς λεπτά ρεύματα | καὶ ἐλκώματα*.

11 ψ]ιμίθειο(υ). White lead, a common component of collyria: cf. e.g. P. Horak 14.3; 4977 4; GMP II 4 ii 2, 10, II 5 ii 26, vi 6; 5252 15 n. The spelling *ψιμίθειον*, rather than *ψιμύθειον*, is regular in the papyri: cf. I. Andorlini, *AATC* 46 (1981) 70-71; 4977 4 n.

12] . *Κιλικεῖ[ο(υ)]*. The ingredient most commonly described as 'Cilician' in Galen's drug books is Cilician saffron, *κρόκος Κιλίκιος*, e.g. *Comp. Med. Loc.* 7.2 (xiii 16.5-6, 28.13 K.), 7.3 (xiii 67.13, 72.1 K.), 7.4 (xiii 76.16 K.), 10.1 (xiii 330.15 K.), *Comp. Med. Gen.* 7.7 (xiii 986.6 K.); cf. SB XIV 12175.4 *κρόκου Κιλίκιου*, XX 14224.2 *κ[ρ]όκου Κιλίκιος*. Galen also refers to *ὑσσώπος Κιλίκιος*, e.g. *Comp. Med. Loc.* 5.1 (xii 818.17-18 K.). *στύραξ Κιλίκιος* (Cilician storax, *Styrax officinalis* L.) is mentioned as a particularly good variety at Dsc. 1.66 (i 59.18 W.). The first trace is a low dot, perhaps the foot of a diagonal descending from left to right. υ does not look suitable, but abbreviated *κρό[κ]ο[υ]* or *ὑσσώ]π[ο(υ)]* might be considered, though *κρόκου* is nowhere else abbreviated in what survives. *στύρακος* would also fit.

14 A new recipe begins here.

14-15] . *γεις ὀφθαλ[μ]οῦ*. WBH suggests (e.g. *πρ(ός)* *ἀσθενεῖς ὀφθαλ[μ]οῦ*: cf. Aët. 7.112 (CMG VIII.2 381.5-7) *κολλύριον ... βωννῆναι δυνάμενον τοὺς ἀσθενεῖς τε καὶ εὐπαθεῖς ὀφθαλμοῦς*, 100 (CMG VIII.2 345.20) *τρέφει δὲ καὶ τοὺς κατηρθενηκότας ὀφθαλμοῦς*, 117 (CMG VIII.2 393.12-13) *τονικὸν τῶν κατηρθενηκότων ὀφθαλμῶν*; SB 17134 fr. B iii 11 (quoted in ii 4 n. below).

Col. ii

2 . . .]λου: ἀμύ]λου would fit the traces and the available space. Starch is also present at 11 (in the same quantity) and 20; cf. 11 n. 'Or possibly φύλ]λου (cf. 5252 11 n.), often included in collyria, e.g. Aët. 7.100 (CMG VIII.2 350.12)' (WBH).

ὀ]πίο[υ]. Common in collyria. Cf. e.g. GMP II 4 ii 5 n.

2-3 κ[. . .]. The space available suggests the supplement κ[ρ]ό[κου]. Saffron is also common in collyria: cf. e.g. GMP II 4 ii 11 n; also 5253 5 n.

3 κόμμε[ω(ς)]. Cf. i 8 n.

4 *πρ(ός)* ἀμ[βλυω]πιαν. Dim-sightedness, or blurred vision, against which collyria are often claimed to be effective: cf. iii 14 and e.g. Gal. *Comp. Med. Loc.* 4.7 (xii 735.3, 783.7 K.), SB 17134 fr. B iii 11-12 *πρ(ός)* ἀμβλυωπ(ίας) καὶ ψωρόδ(εις) ὀφθαλμοῦς | καὶ βαπτίτα βλέφαρα (but WBH notes that *πρ(ός)* ἀμβλυωπ(ίαν) κτλ. as here is also a possible resolution).

4-5 *πτε[ρ]ύγια*. Pterygium is a condition involving the gradual growth of a fine membrane over the eye, beginning from its corner: cf. ps.-Gal. *Int.* 16.6 (xiv 772.7-11 K. = 82.2-6 Petit); *Def. Med.* 366 (xix 439.5-6 K.); Marganne, *Ophthalmologie* 106-9; 5240 fr. 1. -α (WBH) is restored rather than -ο(υ): the plural is regular in titles after *πρ(ός)*.

5 λίθου αἵματι[του]. According to Dioscorides, haematite is mined in Egypt (5.126.5 (iii 95.7–8 W.)) and is effective against various ocular disorders, including scars (οὐλαί) and rough areas (τραχώματα) in the eyes when applied with honey, and ophthalmia and bloodshot eyes with women's milk (5.126.1 (iii 94.4–7 W.)). It is included in the collyria in the second-century P. Strasb. gr. inv. 90 fr. F B 4, 7, 14 (Kalbfleisch, *Pap. argent. gr.* 4–5). Cf. R. Halleux, *Les Alchimistes grecs* i (1981) 206.

5–6 ἀμμωνιακ(οῦ) θυμιάματ(ος). Gum ammoniac, literally 'ammoniac incense', the resin of the ammoniac plant, *Ferula marmarica* L. At Dsc. 3.84.3 (ii 101.14–15 W.), gum ammoniac is said to cleanse white spots (λευκώματα) on the eyes and reduce rough areas on the eyelids. ἀμμωνιακὸν θυμιάμα is included in a recipe for a skin disorder at SB 17134 fr. A ii 9, and in a μάλαγμα at P. Köln XI 437.7. For its use in eye salves, cf. e.g. GMP II 5 iii 25 n.

6 ζύρυν(ης). Myrrh, the resin of a tree (*Commiphora myrrha* Engl.), on which see Andorlini (i 11 n.) 61–5; GMP I 14.3 n., II 4 ii 4 n., II 5 ii 10 n. It is said at Dsc. 1.64.5 (i 59.5–7 W.) to be good for wounds on the eye, white spots (λευκώματα), particles obscuring the vision, and trachoma, and is extremely common in collyria. ζύρνα is the regular spelling in the papyri: cf. Gignac, *Grammar* i 121–2. It is found in this text also at ii 24 and iii 6 and 20; cf. also ii 16 ζύρυν(ης) στακτ(ης).

6–7 ζαγαπήνου. Sagapenum, the resin derived from *Ferula persica* Willd. Dioscorides (3.81.2 (ii 97.18–20 W.)) recommends it for dim-sightedness (ἀμβλυωπία), as well as for scars on the eyes, particles obscuring vision, and cataracts. It is mentioned at P. Ryl. Arab. I VIII 2.5.

7 εὐφορβείου. Juice of spurge (*Euphorbia resinifera* Berg.). Cf. ps.-Dsc. *Eup.* 1.40.1 (iii 165.8–10 W.) καθαίρει δὲ τὰ ἐπισκοτοῦντα ταῖς κόραις (καὶ) ἄργεμα καὶ νεφέλια καὶ ἀχλὺς· ποιεῖ δὲ καὶ δευδερκίαν ἐπὶ τῶν ἀμβλυωποῦντων ἐγχερόμενα, followed by a list including εὐφορβίου χυλός, 1.40.2 (iii 165.18 W.). Pliny, *NH* 25.77–9, states that King Juba discovered the plant on Mt. Atlas and named it after his physician Euphorbus, the brother of Augustus' physician Antonius Musa (cf. *NH* 5.16, where Euphorbus is the discoverer). Juba is said to have written a treatise on it (cf. Gal. *Comp. Med. Loc.* 9.4 (xiii 270.10–271.4 K.)), in which he stated that its juice improved eyesight (Plin. *NH* 5.16): cf. A. Pietrobelli, in B. Maire (ed.), *'Greek' and 'Roman' in Latin Medical Texts* (2014) 157–82. Pliny indicates also that its collectors see more clearly (*NH* 25.78). The milky juice is a strong irritant, and both Pliny and Dioscorides (3.82.1 (ii 98.1–8 W.)) describe how those who collect it fasten an animal's stomach round the plant and cut into the stem from a safe distance with a javelin. The juice flows freely and collects in the stomach. Dsc. 3.82.3 (ii 98.17–99.1 W.) remarks on its ability to clear up cataracts, adding πυροὶ μέντοι δι' ὅλης τῆς ἡμέρας, ὅθεν μέλιτι μείγνυται καὶ κολλυρίοις κατ' ἀναλογίαν τῆς δριμύτητος. Such irritating effects may account for the small quantity included in this recipe. εὐφόρβιον is also found in a recipe for an eye plaster in P. Strasb. gr. inv. 90 fr. F C 5 (ed. I. Andorlini, in A. Garzya (ed.), *Storia e ecdotica dei testi medici greci* (1996) 20), and in P. Cair. Masp. II 67141 (MP³ 2406) f. II' 27, perhaps of the end of the sixth century, and P. Scholl 15.6 (vi).

8 κόμμεως. Cf. i 8 n.

9 πρ(ός) ρεύμα. Cf. i 10–11 n.

10 κωρέας μολεῖβου. For ι > ε before a back vowel, see Gignac, *Grammar* i 251–2. Lead dross, according to Dsc. 5.82 and 5.81.3 (iii 55.13, 54.5 W.), is effective against τὰ ἐν τοῖς ὀφθαλμοῖς ρεύματα. Lead may have been mentioned at P. Strasb. gr. inv. 90 fr. F D 10]ν κεκαυμέν[ου (Kalbfleisch, *Pap. argent. gr.* 5).

10–11 πεπλυμένον. 'We require the feminine, in agreement with κωρέας. Cf. Dsc. 5.82 (iii 55.14 W.); Aët. 7.32, 34 (CMG VIII.2 282.8, 285.10). The error may be due to a false resolution of πεπλυμ() (as at 22) or the like at some stage in the transmission' (WBH).

11 ἀμόλου. Dsc. 2.101.2 (i 176.1 W.) notes that starch is effective πρὸς ὀφθαλμῶν ρεύματα. It is present also at 20 and perhaps 2; cf. iii 21–3 n.; GMP II 4 ii 20 n.

ψιμί[θ]είο(υ). Cf. i 11 n.

12 στεγίμεω(ς). The white oxide of antimony, rather than the metal itself. Plin. *NH* 33.103–4 and Dsc. 5.84.3 (iii 56.11–17 W.) describe processes by which the sulphidic ore of antimony, known as stibnite, is roasted to produce the white oxide, the substance used for medicinal purposes, the metal itself being subsequently

rejected: cf. R. J. Forbes, *Studies in Ancient Technology* ix (1964) 160–63. It is a common ingredient in eye salves, regularly found in papyrus recipes, e.g. GMP II 4 ii 18, where see n.; cf. Plin. *NH* 33.104. At Dsc. 5.84.2 (iii 56.5–6 W.), it is said to cleanse dirt and sores in the eyes. Coptic *εἴμι* is present below at 21–2, where see n.

λεπίδος χαλκο(ῦ): again at 25. Dsc. 5.78.2 (iii 48.1–3 W.) notes that flakes of copper are added to ophthalmic remedies, drying up rheum and reducing roughness on the eyelids. Cf. Halleux (5 n.) 220. [λε]πίδος is included in a collyrium at SB XXVIII 17139.20 (MP³ 2410.12).

ὀπίου. Cf. 2 n.

13 γάρδου Κελλ(τ)ικ(ης). Celtic spikenard (*Valeriana celtica* L.) was recognized as having general warming and drying properties, and was commonly added to eye remedies: cf. Dsc. 1.7.4, 1.8.3 (i 12.19–21, 13.18–23 W.). It is also found among the recipes for eye plasters in P. Strasb. gr. inv. 90 F C (ii 7 n.) 1–2; in a recipe for a collyrium at GMP I 14.6; and in an unidentified form of medicament at P. Coll. Youtie I 4.4 (MP³ 2407.4). WBH suggests that the spelling error in κελλικ^δ may be due to an incorrect expansion of a more drastic abbreviation such as κεῶ, used in the Strasburg papyrus; cf. 10–11 n.

κόμμεω(ς). Cf. i 8 n.

13–14 ῥό[δ]ι[ω(ν)] ξηρῶν. For the use of dried roses in eye preparations, cf. e.g. Gal. *Comp. Med. Loc.* 4.7 (xii 768.17, 772.13–14, 773.4–5 K.).

15 [] δ (). The first two traces are the left-hand arc of a circle (o or c rather than ε, since no crossbar is visible) and the lower right-hand arc of a circle (o rather than ω); ε[π]οδος(ῦ) is probable, as at iii 14–15. σποδος is an impure zinc oxide; cf. Dsc. 5.75.1 (iii 40.14–18 W.); Forbes, *Studies in Ancient Technology* viii (1964) 263–4.

15–16 χαλκο(ῦ) κε[] (καυμένον). Cf. i 4 n. For the form of the abbreviation assumed in the participle, cf. ii 22.

16 ζύρυν(ης) στακτ(ης). Cf. Dsc. 1.60 (i 55.12–16 W.) στακτὴ δὲ καλεῖται τῆς προσφάτου κυμύνης τὸ λιπαρόν, κεκομμένη μεθ' ὕδατος ὀλίγου ἀποθεθλιμμένης τε δι' ὄργανου. εὐώδης δὲ λίαν καὶ πολυτελής ἐστι καθ' ἑαυτὴν οὐσα μύρον τὸ καλούμενον στακτῆ. δόκιμος δὲ ἐστὼ ἡ ἀμυγῆς ἐλαίου καὶ ἐν ἐλαχίστῳ πλείεστην δύναμιν κεκτημένη; J.-L. Fournet, in A. Boud'hors, C. Louis (edd.), *Études coptes X* (2008) 159. Its expensiveness perhaps explains the small amount used in the recipe.

κ[ρ]όκου (τριώβολον). Cf. 2–3 n. The final trace is an upright descending below the line, consistent with Γ but not with ς.

17 ὀπίου πεφωσμένο(υ). Cf. iii 22 ὀπίου ὀπτοῦ; Dsc. 4.64.6 (ii 220.17–18 W.) φώγνυται δὲ εἰς τὰ ὀφθαλμικὰ ἐπ' ὀστράκου καινοῦ, ἕως ἂν μαλακὸς καὶ κυρρότερος φανῆ. There are examples in eye remedies in Gal. *Comp. Med. Loc.* 4.7 (xii 758.7, 774.14 K.), 4.8 (xii 796.3–4 K.).

ἀκακία(ς). The juice derived from the fruit, and sometimes leaves, of the acacia tree (*Acacia* Willd. sp.), which is also the source of gum arabic, is recommended for several eye conditions at Dsc. 1.101.2 (i 93.8–11 W.). It is mentioned again at iii 19 and possibly at i 6–7 (i 3–9 n.), and is a very common ingredient in papyrus collyria: cf. GMP I 14.7 n.; also GMP I 13.4, II 4 ii 3, II 8.12. WBH suggests that the final c dropped out due to the similarity of c to the upper part of ς.

17–18 (δρ.) α, | οί δὲ (δρ.) δ. For this pair of variants, no doubt due to the confusion of letters of similar shape, cf. e.g. Gal. *Comp. Med. Loc.* 1.8 (xii 490.1 K.) κυπέρου λίτραν α', οί δὲ δ', 9.2 (xiii 249.1–2 K.) νίτρον γο α', οί δὲ δ'.

18 κό[μ]μειω(ς). Cf. i 8 n.

[ὄμ]βρειον tentatively read and supplied by WBH, who notes that the ε, above the final letter of the following line, is the clearest.

The paragraphus is represented by a small trace above the right-hand side of the initial κ of the next line (WBH).

19 ὃ ἔσχεν πολλὴν [π]ρογραφίην. WBH compares Androm. ap. Gal. *Comp. Med. Gen.* 5.5 (xiii 807.7–8, 13–14 K.) χλωρὰ Ἐπικούρου πολλὴν ἐπαγγελίαν ἔχουσα ... χλωρὰ, πολλὴν ἐπαγγελίαν ἔχουσα, Ἀλκιμῆνος ἢ Νικομάχου, πρὸς κύριγγας κτλ. According to Galen's usage, προγραφὴ should refer to the specific title of the recipe, while the list of conditions for which it is suitable is called the ἐπαγγελία: cf. Fabricius, *Galens Exzerpte*

ἡμέρου σπέρματος. 'πηγάνου is understood from 15 πηγάνου[υ ἀγρίου] σπέρματος(ος), the only other seed in the recipe. The ellipse is somewhat harsh, but easily accounted for: in the copy from which the variant is drawn, καὶ ἡμέρου σπέρματος κτλ. will have come immediately after πηγάνου ἀγρίου σπέρματος τριάβολου: cf. e.g. SB VIII 9860(b).14-16 (MP³ 2391.6) πηγάνου ἀγρίου [σπέρ]ματος (δρ.) δ } καὶ ἡμέρου (δρ.) δ. Wild and cultivated rue had similar properties and uses: cf. Dsc. 3.45 (ii 57.1-59.12 W.)' (WBH).

[: a high trace, perhaps an addition to the quantity in obols. There is not room for ὕδωρ, and to judge by line π, gum arabic and water would be expected at the end of the recipe proper, before ἄλλοι καί. They may have dropped out: WBH compares GMP II 5 vi 21-2, where the expected ὕδωρ χρῶ is not present.

18 κολλύριον(ν) στατικόν. Cf. Aët. 7.104 (CMG VIII.2 361.1-3) περὶ τῶν στατικῶν κολλυρίων καὶ ἐρικη-
ρῶν. καὶ τὰ στατικά δὲ καλούμενα κολλύρια ἀποκρουστικά τυγχάνει· ἵσται γὰρ τὴν ἄτακτον ὀρμὴν τοῦ βεύ-
ματος. For papyrological examples, cf. P. Ross. Georg. V 57 (MP³ 2413) v. ii 4, π; P. Princ. III 155 (MP³ 2379.2)
→ 1 (I. Andorlini, in A. Marcone (ed.), *Medicina e società nel mondo antico* (2006) 165); O. Bodl. II 2181, 2183,
2187 (MP³ 2424, 2426, 2430). There is a probable reference in a private letter at LIX 4001 36 (στατικά): cf. n.

18-20 These six ingredients are all familiar in collyria: for example, they are found, together with burnt copper, in some ἀχάριστα. Cf. on 5249 below.

18 καδμεία. Cf. ii 22 n.

18-19 ἐρίκη καρποῦ. Seed-pod of heather (*Erica arborea* L.), a common ingredient in collyria: cf. GMP I 13.2-3 and 7 (restored); ἐρείκη alone at GMP II 7 ↓ 5 and P. Horak 14.8; also I. Andorlini, *BASP* 18 (1981) 15.

19 ὀπίου. Cf. ii 2 n.

ἀκακία[ς]. Cf. ii 17 n.

20 ζμύρν(η)ς. Cf. ii 6 n.

κόμμεω(ς). Cf. i 8 n.

21-3 This recipe resembles that for the μήλιον collyrium at 1088 1-7. Both include calamine, poppy juice, saffron, fissile stone, and, as regularly, gum arabic and water. The quantity of fissile stone is the same in both, while 1088 calls for three obols of poppy juice and 5243 for two. The other quantities are missing or illegible in 5243. The recipe in 1088 has two further ingredients, ψιμιθίου (δρ.) η and ἀμύλου (δρ.) δ. The latter would fit the spaces and traces in line 23. ἀμύλου is placed second between two mineral ingredients at ii 11 and first at ii 20.

21 μήλιον. For the use of this adjective in the titles of collyria, cf., besides 1088 1, Gal. *Comp. Med. Loc.* 4.7 (xii 769.11, 786.14, 787.3 K.); J. Voinot, *Les Cachets à collyre dans le monde romain* (1999) 47. All the preserved recipes contain saffron, which will have lent them its colour, and WBH notes that the two papyrological examples both contain another yellow ingredient, λίθος χριστός: cf. Dsc. 5.127.1 (iii 95.10 W.) ἄριστος δὲ εἶναι δοκεῖ ὁ παρακροκίζων τῆ χροῦ, Plin. *NH* 36.145 *commodiior croco similis*. Certain collyria called χλωρόν also contain saffron: cf. GMP II 4 ii 15 n. For yellow plasters, many of which owe their colour to iron, cf. P. Mich. 758 E 9-15 n.

Θερμουθάριον is familiar as a female personal name in Egypt, but does not seem to be found elsewhere as the name of a collyrium. Cf. for the hypocoristic form e.g. Μουσαρίον, Νικάριον (Alex. Trall. *Therap.* 2 (ii 15.7, 23.4 P.), Aët. 7.117 (CMG VIII.2 394.13)), and in general on such names PSI Congr. XXI 3 ii 9-19 n.' (WBH).

καδμεία[ς]. Cf. ii 22 n.

22 λίθου χρι(στοῦ). Probably limonite: cf. e.g. R. Halleux, J. Schamp (edd.), *Les Lapidaires grecs* (1985) 287 n. 3. Dsc. 5.127.2 (iii 95.13-16 W.) notes that it is useful as a medicament for several eye conditions. It is found in papyrus collyria at 1088 5 and GMP II 5 v 2, 16, viii 17, 26. χρι(στ-) is so abbreviated in 1088 5 (plate: Andorlini (18 n.) 164 fig. 5a), SB 17134 A ii 33, iii 12, 39, G 7.

ὀπίου ὀπτοῦ. Cf. ii 17 n., and e.g. SB 9860(a).3 ὀπ(ί)ου ὀπτοῦ (in a collyrium).

κρῆ[κου]. Cf. ii 2-3 n.

23 . . . [. . .] . . . [. . .]. Possibly ἀμ[ύ]λου followed by a quantity: cf. 21-3 n.; ii 11 n.

κόμμεω(ς). Cf. i 8 n.

D. LEITH

5244. RECIPE FOR TOOTH POWDER

100/39(d)

6.5 × 12.5 cm

Later third century
Plate XII

Remains of 13 lines, written across the fibres on the back of a Latin military document dated to the reign of Philip and his son (244-9). The original upper and left-hand edges are preserved in part, giving an upper margin about 1.6 cm deep and a left-hand margin about 0.6-1.2 cm wide. The preserved right-hand edge falls just to the left of the original margin.

The hand is a well-executed upright cursive like that of XLVII 3366 C, of 258. Apostrophe separates two consonants (8). ι is written once for ει (7). Initial ι receives a diaeresis (6).

The fragment contains a recipe for a preparation to be used in treating ulceration of the gums. Two other published papyri contain recipes for preparations intended for dental care, MPER NS XIII 7 (MP³ 2423.5), a powder for 'white and "uncorroded" teeth', and P. Ryl. I 29(a) (MP³ 2379) 24ff., a dentifrice, ὀδοντότριμμα, but these are both prophylactic. This recipe is said to have been obtained from Julianus of Caesarea: for the inclusion of such information in recipes, cf. e.g. 5246, 5248, 5249, 5250; P. Mich. XVII 758 (MP³ 2407.01) introd. (pp. xxi-iv). Medical recipes were commonly exchanged among doctors, healers, and laymen alike: cf. e.g. P. Mert. I 12 (MP³ 2407); Gal. *Comp. Med. Loc.* 1.1 (xii 423.13-15 K.); *Ind.* 31-7 (ii.7-13.2 Boudon-Millot-Jouanna); Plat. *Charm.* 156d.

The composition of the recipe (calamine, πομφόλυξ, and probably one or more lost ingredients) distinguishes it from those preserved elsewhere for preparations to be used in cases of dental or gum diseases. Calamine and πομφόλυξ are found, separately or together, in eye salves and plasters, usually those to be used against various types of ulcerations, but they are rarely used in connection with dental problems. πομφόλυξ is, however, said to be effective against corroded gums (Aët. 2.67 (CMG VIII.1 175.9-11)). It appears in a recipe for loose teeth and purulent gums in Archig. ap. Gal. *Comp. Med. Loc.* 5.5 (xii 873.6 K.), which is repeated in Aët. 8.31 (CMG VIII.2 443.26-8) and in ps.-Dsc. *Eup.* 1.74 (v 180.14 W.). Calamine, together with rock-alum (χαλκίτις), is found in a recipe for a powder to be used against ulcerations of the gums in Aët. 8.25 (CMG VIII.2 434.18-24); the same ingredients are used in a preparation to be used in cases of loose teeth and discharge from the gums in Paul. Aeg. 3.26.3 (CMG IX.1 199.7-9), and again in a prescription for a growth on the gums (ἐπουλίς) in Aët. 8.27 (CMG VIII.2 437.7-9). Calamine is also contained in a medicine for amblyopia and aching teeth in Alex. Trall. *Therap.* 2 (ii 45.21-47.3 P.). 5244 appears to be an original prescription for ulceration of the gums, using calamine for its astringent, cleansing, desiccating, and cicatrizing qualities (Dsc. 5.74.2 (iii 38.7-14 W.)), and πομφόλυξ for its cooling, purging, adhesive, desiccating, and cicatrizing properties (Dsc. 5.75.12 (iii 43.19-21 W.)), Paul. Aeg. 7.13.1 (CMG IX.2 323.1-8)).

περὶ ὀδόντων. [
 ξηρὸν ποιοῦν πρ[ὸς
 ἀνεβεβρωμένα
 καὶ ρευματώδη μά-
 5 λιστα εἰς νύκτα, [
 ὃ ἔσχον παρὰ Ἰου-
 λιανοῦ ἀπὸ Καισαρίας· [
 καδμείας κεκαυ-
 μένης καὶ ἔσβε-
 10 μένης ὡς οἴνου [
 ὡς οὐγκίας ἢ η-
 παμφύλογος πε-
 π]λυμένου [] [

1 π enlarged 3 l. ἀναβεβρωμένα 6 ἴου 7 l. Καισαρίας 8 καδμείας 10 ἰ. οἴνω
 12 l. πομφόλυγος

‘Concerning teeth.

‘Powder effective against eroded (gums) and (gums) affected by flux, especially towards night, which I got from Julianus of Caesarea: calamine burnt and extinguished with wine, 8 ounces; washed *pompholyx* ...’

2 ξηρὸν, sometimes ξηρίον, commonly designates a dry powder: cf. GMP II 7 ↓ 1 n. Preparations used to treat conditions affecting the teeth and gums are often composed of ingredients with drying and warming properties, and they are mostly used dry, often in powder form. See e.g. Gal. *Comp. Med. Loc.* 5.5 (xii 867.11 K.); Aët. 8.23, 26 (CMG VIII.2 433.12, 436.7, 10), Marcell. Emp. 12.10–11 (CML V 214.30–216.3).

3–4 ἀνεβεβρωμένα (l. ἀνα-) καὶ ρευματώδη: sc. οἴλα. Cf. introd.

3 ἀνεβεβρωμένα, l. ἀνα-. Cf. Paul. Aeg. 3.26.11 (CMG IX.1 200.22) τὰς τῶν οὐλῶν ἀναβρώσεις. διαβι-βρώσκω and περιβιβρώσκω and cognates are commoner of eroded gums. For the superfluous syllabic augment, cf. Gignac, *Grammar* ii 225.

4 ρευματώδη. Equivalent to the common ρευματιζόμενα.

6–7 Ἰουλιανοῦ ἀπὸ Καισαρίας (l. Καισαρίας). Unidentified. He could be the Methodist doctor (*BNP* s.v. Julianus [2]), of unknown origin, who worked in Alexandria around 150; several prescriptions of his are preserved. Recipes may circulate under the names of their inventors long after their death: cf. e.g. the plaster of Archagathus cited in P. Mert. I 12 (MP³ 2407), the oxymel of Julian in Paul. Aeg. 7.5.2 (CMG IX.2 280.21), the plasters of Azanites, Dionysius, Hygienus, Heras, and Telamon in P. Mich. 758 B, C, D, and E. Recipes may also circulate under the names of famous people who adopted and used them (cf. M.-H. Marganne, in F. Collard, E. Samama (edd.), *Pharmacopoles et apothicaires* (2006) 59–73), but the rhetor and sophist Julianus of Caesarea in Cappadocia (*PLRE* I Julianus (5)), who lived c. 275–340, is probably ruled out on chronological grounds.

8–10 καδμείας κεκαυμένης καὶ ἔσβε[σ]μένης. Calamine was usually burnt, then quenched with wine, vinegar, or occasionally milk, and finally washed. On calamine, cf. 5243 ii 22 n.

10 οἴνου, l. οἴνω. On fluctuation between -ου and -ω(ι) in the genitive and dative singular, see Gignac, *Grammar* i 208–10, ii 22. Wine was used to extinguish burning calamine and also to triturate preparations

containing calamine or other ingredients: cf. e.g. Dsc. 5.74.6–7 (iii 40.3–10 W.); Plin. *NH* 34.103–4; Gal. *Comp. Med. Loc.* 4.7 (xii 731.6–7 K.); Orib. *Syn.* 3.3.1 (CMG VI.3 61.16) καδμείας κεκαυμένης καὶ οἴνω κατεσκευασμένης.

11 οὐγκίας η. The amount of calamine corresponds to that used in an eye salve against ulcers attributed to Nilammon, which begins with the same two ingredients in our recipe: cf. Paul. Aeg. 7.16.16 (CMG IX.2 338.7–9); another version in Aët. 7.106 (CMG VIII.2 370.4–9).

12–13 παμφύλογος (l. πομφόλυγος) πε[π]λυμένου. On the use of α for ο and the transposition of ο and υ, see Gignac, *Grammar* i 287–8, 293–4. πομφόλυξ is a zinc oxide produced by melting together calamine and copper (Dsc. 5.75.2–7 (iii 41.3–42.11 W.), Plin. *NH* 34.128ff.). Mainly because of its astringent, cooling, and adhesive qualities, πομφόλυξ was used in eye salves and plasters for stopping and moderately drying discharges, as well as for malignant ulcers. Cf. e.g. Dsc. 5.75.12 (iii 43.19–21 W.), Gal. *Comp. Med. Loc.* 4.1 (xii 699.12–700.9 K.), Aët. 7.11 (CMG VIII.2 263.7–264.5), Paul. Aeg. 7.3 πομφόλυξ, 7.16.31 (CMG IX.2 253.31–3, 355.6–9).

M. HIRT

5245. RECIPES

23 3B.4/B(1)a

6,5 × 14 cm

Second century
 Plate XII

A fragment broken off at the foot and on the left. The upper and right-hand edges appear to be intact. The upper margin is preserved to a depth of c. 1.8 cm and the right-hand margin to a width of 0.3–0.7 cm. The back is blank.

The text is written along the fibres in an informal upright and semi-cursive hand that somewhat resembles that of P. Phil. 1 (*GLH* 13a) of c. 125. There are some itacistic spellings (ι for ε: 2, 9, 11; ε: for ε̄: 3, 5, 8, 14).

Each recipe begins on a new line, the interlinear space between recipes being slightly larger than that between lines within a recipe. The neat layout is comparable to that of other texts in the same category, e.g. Suppl. Mag. II 83 and 74 (MP³ 2405, 6012).

The fragment contains six short iatromagical recipes. The first five and possibly also the sixth are concerned with problems affecting the head or the eyes. No quantities are indicated. The magical nature of some of these recipes is suggested by the repeated use of φόρι (2, 11, 13), and ἰς χαρτίον γρά- followed by what appears to be a magical formula (9–10).

Some ninety medico-magical papyri have been published: see <http://web.philo.ulg.ac.be/cedopal/medecine-dans-legypte-greco-romaine>. Suppl. Mag. II 74, 94, and 96A.48–72 (MP³ 6012, 2391, 6014) provide parallels for the general form and content of this text.

The neat writing and careful layout of the text may indicate a copy by a scribe, perhaps from a recipe book. But it is impossible to tell whether the text was used by a professional magician or by a doctor, as the boundaries between magic and medicine were often blurred and doctors were not all opposed to the use of ‘wonderful’ remedies, especially for diseases that were difficult to treat, such as headache, fever, gout, and epilepsy. Cf. e.g. Archig. ap. Gal. *Comp. Med. Loc.* 2.2 (xii 573.5–576.4 K.), headache; Archig. ap. Alex. Trall. *Therap.* 1.15 (i 567.10–575.9 P.), epilepsy; Alex. Trall. *Febr.* 6, 7 (i 407.1–10, 437.5–24 P.), quotidian and

quartan fevers; *Therap.* 8.2 (ii 375.20–377.31 P.), colic; II.2 (ii 475.19–24 P.), diseases of the kidneys; 12 (ii 579.13–585.24 P.), gout; V. Nutton, *Ancient Medicine* (2 2013) 275–8.

πρὸς κεφ]αλαγίαν· ἀρνογ[λ]ώ-
σου π[έ]ταλον φόρι.

πρὸς τὰς ἐ]ν ὀφθαλμοῖς κρειθᾶς·
] ας ἀπ[ο]κεφαλίσας τῶ
5] τοῦ τραχήλου παράτρι-
βε.]

πρὸς ὄξυδ]ορκίαν· ὀπὸν Κυρηνα-
ϊκὸν] χρείου.

πρὸς ὀφθαλ]μίαν· ἰς χαρτίον γρά-
10] υβρις[.] . . . χ. . . ἀθρ[.] υ
] αι φόρι.

πρὸς κραιπά]λην· Ἀλεξανδρείας
χαμαιδάφ]νης φύλλα εἴρας φ[ό]ρ[ι].

] α· κυκλαμείνου ἦ
15] καὶ τὸ ἥμισυ
] αν . . . [

1–2 l. -γλώσσου 2, II l. φόρει 3 l. κριθᾶς 5–6 l. παράτριβε 8 l. -χρίου 9 l. εἰς
14 l. κυκλαμίνου

For headache: wear a leaf of plantain.

For styes in the eyes: decapitate (ants) and rub with the (remainder) of the neck.

For sharp-sightedness: smear Cyrenaic juice.

For ophthalmia: write on a small piece of papyrus ... wear.

For drunken headache: wear leaves of Alexandrian chamaedaphne strung together.

'... .. of cyclamen or ... and the half ...'

1–2 ἀρνογ[λ]ώ[σ]ου (l. -γλώσσου) π[έ]ταλον. There is no trace of a *c* at the end of line 1. For the spelling with a single *c*, cf. e.g. γλωσκόμον for γλωσκό- (LXXVIII 5163 fr. 1 i 20 n.). *Plantago major* L., common plantain, had many medical uses (Dsc. 2.126.2–4 (i 199.5–200.15 W.); Gal. *SMT* 6.60 (xi 838.1–839.8 K.)), and was the subject of a book by Themison (Plin. *NH* 25.80; cf. V. Nutton in D. Langslow, B. Maire (edd.), *Body, Disease and Treatment* (2010) 217–18). For the use of the root as an amulet to ease headache, cf. e.g. CCAG VII 234.31–2; IX.2 131.19–20; XI.2 122.3–4; ps.-Apul. *Herb.* 1.1 (CML IV 22.2–4). The use of the leaf in this way appears to be a novelty, but the leaves were used in medicine (cf. Dsc. and Gal., as above), and plant leaves could be worn for medical purposes: cf. e.g. ps.-Dsc. *Emp.* 2.98 (iii 290.7–9 W.), stinking bean-trefoil (*Anagyris foetida* L.); Alex.

Trall. *Febr.* 6 (i 407.4–7 P.), an inscribed olive leaf. For singular π[έ]ταλον used of a plant's leaf, cf. e.g. the herbal P. Tebt. II 679 fr. a.2 (MP³ 2094) with A. E. Hanson, *Pap. Congr. XXII* (2001) i 590.

I have also considered the possibility that π[έ]ταλον here is used of a metal leaf, to be written on (cf. XLII 3068 2), or that π[έ]ταλον is the end of another plant name, such as μυρτοπέ]ταλον or πεντοπέ]ταλον (preceded by ἦ). In that case, one would have to assume a longer line length, either throughout the text, or for every line except the first of each recipe. But since certain or very probable supplements produce a single left-hand margin as shown in the transcription (cf., besides the supplements printed, 4, 5, 8, 14 nn.), it seems fairly reasonable to suppose that the margin is correctly placed there.

2 φόρι, l. φόρει. φορέω is often used of an amulet, e.g. Alex. Trall. *Therap.* 8.2 (ii 375.23, 377.3, 7, 14 P.).

3 κρειθᾶς, l. κριθᾶς. On styes, cf. e.g. ps.-Gal. *Int.* 16.5 (xiv 771.4–6 K. = 81.1–4 Petit); Aët. 7.84 (CMG VIII.2 330.23–331.6); Paul. Aeg. 3.22.14 (CMG IX.1 177.1–4).

4] ας. Perhaps μύρμη]κας,]κ being represented by a high trace near the top of α. Cf. *Cynanides* 2.25.10–11 K. (p. 156) οἱ οὖν κοινοὶ μύρμηκες ἀποκεφαλίζόμενοι καὶ προστριβόμενοι τοῖς βλεφάροις τὰς ἐν αὐτοῖς κριθᾶς θεραπεύουσιν. Decapitated flies were used similarly: cf. e.g. Gal. *Comp. Med. Loc.* 4.8 (xii 803.7 K.); ps.-Gal. *Rem. Parab.* 2.4 (xiv 413.3–4 K.); Aët. 7.84 (CMG VIII.2 330.27–8); Paul. Aeg. 3.22.14 (CMG IX.1 177.1–4). But μν]ίας would be hard to reconcile with the first trace, and the Attic form μ]ίας is unlikely here. For the uses of ants in medicine, cf. I. C. Beavis, *Insects and Other Invertebrates in Classical Antiquity* (1988) 208.

ἀπ[ο]κεφαλίσας. Cf. *Cynanides* 2.25.10–11 K. (quoted above), 3.28.6–7 K. (p. 214) μυῖαι ἀποκεφαλίσθαι; Paul. Aeg. 3.22.14 (CMG IX.1 177.1–4) μνίας τὴν κεφαλὴν ἀποβαλόντα.

4–5 τῶ [] τοῦ τραχήλου: e.g. [λοιπῶ]. Cf. τῶ λοιπῶ σώματι in the passages on the use of decapitated flies (4 n.). The fluid exuded from the wound is apparently supposed to heal the styes.

7–8 For this use of silphium, cf. Dsc. 3.80.3–6 (ii 95.4–97.6 W.), ps.-Dsc. *Eup.* 1.40.3 (iii 165.22 W.). The Cyrenaic was the most potent: cf. Dsc. 3.80.2 (ii 94.15–95.2 W.), Gal. *SMT* 15.12 (xii 90.17–91.2 K.), Plin. *NH* 19.40. For sharp-sightedness in the papyrus, cf. Suppl. Mag. 94 → i 4–6, MPER NS XIII 10.25–6 (MP³ 2423.4), 5243 iii.

7 ὄξυδ]ορκίαν: or ὄξυδ]ερκίαν. The initial trace is a speck at mid-height.

8] χρείου, l. -χρίου. Both κυχρίω and ἐπιχρίω are found in the imperative middle, and either would fit.

9–10 ἰς (l. εἰς) χαρτίον γρά[]: e.g. γρά[]ψα. The imperative (γρά[]ψον, γρά[]ψε) is not excluded, but a conjunction would not be easy to accommodate before φόρι (11):] καὶ seems an unlikely reading there (cf. n.).

For such amulets, cf. e.g. PGM VII 197–8, for discharge from the eyes; 193–6, for a scorpion sting; 218–21, for daily fever with shivering fits.

10] υβρις[.] . . . χ. . . ἀθρ[.] υ. Before χ, the lower right-hand arc of a circle; the turn-up of ε or c; a long upright descending below the line, ρ or ι. At the end, θρ[ο]υ would be suitable. For the magic formula, cf. PGM VII 197–8 πρὸς ῥέυμα ὀφθαλμῶν· ἐπίγραφε εἰς χάρτην καὶ περιάπτει· ρουραρβιχαρουρββριασφρηνη; Marcell. *Emp.* 8.58 (CML V 128.9–13) Hoc etiam remedium indubitate impetus oculorum, si praeuenias, prohibebit scriptum in charta virgine: ἸΟΥΒΡΟ ΠΟΠΕΙΡΑC· Ἡέλιος, δε πάντ' ἐφορᾷ καὶ πάντ' ἐπακούει, quod ad collum dolentis licio suspendi debet.

11 The lacuna at the start of the line will have contained the end of the magical formula.

] αι. The first trace is the right-hand end of a high horizontal, perhaps τ or ς.

12 πρὸς κραιπά]λην: κεφα]λήν is another possibility, but would oddly imply that the remedy relieves conditions affecting the head in general. κῆ]λην, 'hernia', and χο]λήν, 'bile', are too short and less well suited to the remedy than κραιπά]λην.

12–13 Ἀλεξανδρείας | [χαμαιδάφ]νης.] υ is represented by the top of an upright. The chamaedaphne (*Ruscus racemosus* L.), sometimes called Alexandrian, could be used to treat a headache: cf. Plin. *NH* 24.132, Dsc. 4.147 (ii 289.16 W.). Ps.-Dsc. *Eup.* 2.42.4 (iii 261.19–20 W.), a recipe for a potion against colic, has χαμαιδάφνης Ἀλεξανδρῆνης. With a margin further to the left, other possibilities would be available, e.g. Ἀλεξανδρείας | [δάφνης ἢ μυρσίνης, but cf. 1–2 n.

13 εἴρας. The reading is not in any real doubt: the remains of the ligature connecting ε and ι are visible.

Col. i

- ... 1 ... lead (?) ... resin (?) 2 dr. ... the white ... (use) over tampons (?).
 ... resin ... (an equal amount) of each ...
 ... scraping ...
 ... litharge ... mix and use.
 ... anoint.
 ... eye (?) if ... leaves (?) of the castor-oil plant ... admired (...)

Col. ii

- ... well (?).
 ... ophthalmia (?) ... smear.
 'Against coughing and (bringing up) blood ... with saffron ... enough ... take up (and use).
 'For those bitten by an asp (an antidote) is effective (when given to drink).
 'To stop deaf persons: warm (?) ... and instil.
 'Horsetail (?) ...
 'To thrust out shivering fever ... butcher's broom (?) ... the sufferer (...)
 '... for the same thing ... -anthropy ... and ...'

Col. i

- 1] . . . traces on the line, with missing papyrus or abraded surface above. The last may be the drachma sign, though it appears to be written differently at 3 below.
 ā. Contrast 3 β without overline. For similar inconsistency, cf. e.g. 5242; I. Andorlini, *Trattato di medicina su papiro* (1995) 56.
 2-3] μολι: e.g.] μολι[[βου,] μολι[[βδαινα,] μολι[[βδωδης, etc. Lead, μόλιβος or μόλυβδος, is effective against running eyes, bleeding, and various types of sores, among other things: cf. Dsc. 5.81.3 (iii 54.4-11 W). Galena, μολιβδαινα or μολύβδαινα, is used e.g. in certain types of plasters: cf. Dsc. 5.85 (iii 56.18-57.10 W); Gal. *SMT* 9.3.22 (xii 229.9-230.5 K.). μολιβδώδης or μολυβδώδης can be used e.g. of a skin colour: cf. Gal. *Cur. Rat. Ven. Sect.* 10 (xi 282.9 K.).
 3] . . . ηης: the first trace is an upright. ρ]ητήνης is likely: cf. 7 below.
 4-5] του λευ[κι: e.g. ώσοῦ] τοῦ λευ[κοῦ. Cf. 5248 fr. 1 ii 3 n.
 5] πανωμο. WBH suggests e.g. ἐ]πάνω μο[ι[των χρῶ at or near the end of a recipe (noting the blank end of the following line): cf. Gal. *Comp. Med. Loc.* 8.2 (xiii 134.7-8 K.) χρῶ δὲ καὶ ἐπὶ παρωνυχιῶν ξηρῶ, ἐπάνω μοτῶν σὺν ῥοδίνω.
 7 ρ]ητήνης. On the different sorts of resin and their therapeutic use, cf. e.g. Dsc. 1.71 (i 67.19-70.14 W); GMP I ii fr. A.11 n.
 8]ν ἐκάστου. WBH suggests e.g. ἴσο]ν ἐκάστου, noting that such expressions are commonly found in recipes before the final instructions, e.g. Gal. *Comp. Med. Loc.* 8.7 (xiii 204.15 K.).
 10] . . . The first is an upright closely followed by an S-shaped trace, joined at the top by a crossbar. The crossbar is joined from below, perhaps by an upright of which only the top survives, and then by an upright with a right-pointing finial at the foot, perhaps abraded above; then to the right of an abraded patch, another high trace. (WBH doubtfully suggests ς] for κ(αι) πρ(ός).)
 μαι. Perhaps μαι[[νόμεια: cf. Asclep. ap. Aët. 15.14 (60.9 Z.) μαινόμενα ἔλκη.
 11] αξύων: ἀν]αξύων, κατ]αξύων,]αξύων.
 13 λιθαργύρου. Litharge (lead monoxide) is common in plasters: cf. Dsc. 5.87 (iii 57.15-61.4 W); GMP II 5 iii 23 n., with further references, adding P. Scholl 14.11 (vi; MP³ 2403.01), BKT X 25 ↓ 1 (vi/vii; MP³ 2355.024); W. C. Till, *Die Arzneikunde der Kopten* (1951) 50-51.
 14 μί]γε: cf. P. Mich. XVII 758 D 9 (MP³ 2407.01) μί]γων χρῶ, Gal. *Comp. Med. Gen.* 2.19 (xiii 545.16 K.) μί]γε καὶ χρῶ, Aët. 8.50 (CMG VIII.2 484.13) λέανας μί]γε πάντα καὶ χρῶ, and on the use of μί]γε alongside μ(ε)λινου in the present, Gignac, *Grammar* ii 281.

15]ομένους. Possibilities include ἀρχ]ομένους, γεν]ομένους, γυν]ομένους, τριβ]ομένους. Cf. e.g. Gal. *Comp. Med. Gen.* 3.9 (xiii 647.12 K.) ποιεί δὲ πρὸς ἀρχομένους ὑδροπας; ps.-Gal. *Rem. Parab.* 2.26.32 (xiv 483.18 K.) πρὸς τοὺς γενομένους ετρόφους; Orib. *Eur.* 4.62 (CMG VI.3 460.13-14) πρὸς ... τοὺς τριβομένους καὶ τοὺς αἰμωδιώντας.

16 αλ]είφου: ἀλ]είφου, ἐπαλ]είφου.

17]αλμον. ὀφθ]αλμόν is likely: cf. next n.

18]α κίκεος, 1. κίκεος; perhaps φύλλα]α κίκεος. For the genitive singular of *i*-stems, see Gignac, *Grammar* ii 75-9; cf. e.g. SB XXVIII 17134 fr. B iii 6 (PSI X 1180, MP³ 2421) πεπέρεος, 14 πεπέρεο(ς). Cf. esp. Dsc. 4.161.2 (ii 306.9-11 W.) τὰ δὲ φύλλα τριφθέντα μετὰ πάλης ἀλφίτου ὀφθαλμῶν οἰδήματα καὶ φλεγμονὰς παύει κτλ.; in general on the castor-oil plant, D. B. Sandy, *CE* 62 (1987) 49-52; id., *The Production and Use of Vegetable Oils in Ptolemaic Egypt* (1989) 35-54, 101-6.

κα] . The last is the top of a descending oblique on the edge, e.g. λ.

19]θαυμαζόμε[. WBH suggests θαυμαζόμε[|νον, of the remedy in question: cf. e.g. Gal. *Comp. Med. Loc.* 4.7 (xii 747.9-10 K.) εὔχρονον καθ' ὑπερβολὴν καὶ θαυμαζόμενον ἐπὶ τῶν ἔργων (of an eye remedy), 5.5 (xii 869.16 K.) μυλικὴ ἀγαθὴ, ἐπὶ πολλῶν θαυμασθεῖσα, and the common use of θαυμασίος and θαυμαστός.

Col. ii

- 1] καλω[; e.g.] . καλῶ[ς. The first trace is apparently the foot of an upright on the edge. WBH suggests ποιε]ζ καλῶ[ς at the end of a recipe: cf. e.g. ps.-Gal. *Rem. Parab.* 2.8.6 (xiv 429.11-12 K.) ὄνυξ χελώνης ἐντιθέμενος τῇ βεβρωμένη μύλη ποιεὶ καλῶς.
 2]λμιαν. Probably ὀφθα]λμίαν or a compound. WBH, noting that the name of a condition suggests the opening of a recipe, suggests πρ(ός) ὀφθα]λμίαν beginning on the same alignment as 7, 9, 11, and 14.
 3] καταχρ[ι. Probably κατὰ]χρ[ις.
 4 πρ(ός)] βήκα (1. βήχα) καὶ αἵμα[τος ἀναγωγὴν or πτύειν read and supplied by WBH: cf. for the spelling MP³ 2386 (ed. I. Andorlini (i 1 n.)) iv 15]τασβηκας (with GMP II 1, pp. 12-13), PGM VII 203, 205, and for the restored title e.g. Gal. *Comp. Med. Loc.* 7.3 (xiii 70.16-17 K.) πρὸς βήχα καὶ ἀρχομένας φθίσεις καὶ αἰμοπτύκους καὶ ρευματισμούς, 8.7 (xiii 202.15-16 K.) πρὸς ἥπατικούς ... καὶ βήχας καὶ ἀναγωγὰς αἵματος ἀναγωγὴ is found e.g. in P. Ant. III 124 fr. 3(b).4-5 (MP³ 2380.1), 128 fr. 1(b).4 (MP³ 2362.5), πτύειν αἵμα[|τος in MP³ 2386 iv 6-7.
 5 κρόκο]ν: for the use of saffron in cough remedies, cf. Andorlini, *Trattato* (i 1 n.) ii 37-8 n. (pp. 108-9); GMP II 12.2 n.
 5-6 τῶ] ἀρκοῦν. E.g. μέλιτος τῶ] ἀρκοῦν: cf. J.-L. Fournet in I. Andorlini (ed.), *Testi medici su papiro* (2004) 184 on SB XXVIII 17138.3 (MP³ 2410.15). Honey is common in cough remedies: cf. e.g. Scribon. ap. Gal. *Comp. Med. Loc.* 7.3 (xiii 67.8-12 K.), a recipe including saffron and μέλιτος τὸ ἱκανόν; GMP II 12 introd. (pp. 176-7).
 6 ἀνελ[όμενος χρῶ supplied by WBH, as commonly at the end of a recipe: cf. e.g. Charixen. ap. Gal. *Comp. Med. Loc.* 7.2 (xiii 49.13-14 K.).
 7 πρ(ός) ἀσπιδοδῆκτου]ς: cf. GMP II 5 iv 26 (MP³ 2422) ἄσπιδο(δῆ)κτους, in the title of a recipe. See in general Aët. 13.22 (280.20-282.13 Z.), περὶ ἀσπιδοδῆκτων; GMP II 5 introd. (p. 73).
 7-8]τιζομένη πο]ι[εῖ. πο]ι[in this position near the end of a recipe is likely to represent πο[ι]εῖ. Before it, perhaps θηριακὴ πο]ι[τιζομένη: cf. Aët. 13.22 (282.10-11 Z.) παραδόξως δὲ ποιεὶ καὶ ἡ δι' ἐχιδνῶν θηριακὴ κατὰ τῆς πληγῆς ἐπιτιθεμένη καὶ ποτιζομένη. After it, WBH suggests e.g. καλῶς: cf. 1 n.
 9-10 Cf. e.g. II 234 (MP³ 2360.2), recipes for ear remedies.
 9 κωφούς παύσαι. For κωφούς in recipe headings, cf. e.g. ps.-Gal. *Rem. Parab.* 2.3.11 (xiv 405.9 K.) πρὸς τοὺς ἐκ γενετῆς κωφούς. For compound forms, cf. e.g. Gal. *Comp. Med. Loc.* 3.1 (xii 650.6-7 K.) πρὸς δὲ τοὺς ὑποκόφους, εἴτε δυσκώφους εἴτε δυσηκούς ἐθέλοι τις ὀνομάζω.
 χ[; e.g. χ[υλόν, χ[ολήν. Cf. e.g. Apollon. ap. Gal. *Comp. Med. Loc.* 3.1 (xii 651.13-15 K.) = AM.19 von Staden (p. 552) πράσου χυλὸν καὶ ἴρωνον μύρον μίξας ἔνεταζε. χολήν βοείαν καὶ αἰγείαν καὶ μύρον ῥόδων

μίξας ἔνσταζε (for hardness of hearing); Aët. 6.80 (CMG VIII.2 225.18–22) πρὸς δυσκωφίας ... κάλλιστον δὲ καὶ κυκίου ἀγρίου τῶν ῥιζῶν ἢ τῶν φύλλων ὁ χυλὸς ἐν ὄξει ἐγχεόμενος· ἢ οὖρον αἰγῶς καὶ χολήν αὐτῆς ἅμα θερμάνας ἐγχυμάτιζε. Both are paralleled in 234 ii (χυλός: 43, 49; χολή: 30, 45).

9–10]] γας ἐγχυμάτιζε. Probably χλιαί] γας or θερμά] γας with χ[υλόν or χ[ολήν; cf. e.g. Aët. 6.80 (CMG VIII.2 225.9, 22). λεά] γας is another possibility; cf. e.g. Apollon. ap. Gal. *Comp. Med. Loc.* 3.1 (xii 651.17–652.1 K.). 234 has χλιαίνειν (i 3, ii 6, 13, 22), θερμός (ii 44, 48, 49), and λεαίνειν (ii 5); cf. ii 42 ἐγχύμασιν.

ii ἔφεδρον. Another name for ἔππουρις, *Equisetum silvaticum* L., 'horsetail'. Cf. Dsc. 4.46.1 (ii 203.9 W.) ἔππουρις· οἱ δὲ ἀναβάσιον, οἱ δὲ ἔφεδρον καλοῦσι; Plin. *NH* 26.133 *alii hippurin, alii ephedron, alii anabasin vocant*. It is astringent and diuretic, and its parts are good for a variety of conditions, such as bleeding, dysentery, cough, ruptured bladder, intestinal hernia, spreading sores, etc.

ἀναβολή. Probably a form of ἀναβολή, ἀναβολεύς, 'lever or instrument for lifting', is also possible; cf. e.g. Orib. *Coll. Med.* 45.6.2 (CMG VI.2.1 164.20). In medical writings, ἀναβολή may refer to throwing up food (Gal. *Comp. Med. Loc.* 8.3 (xiii 146.4 K.)); the removal of a tumour (Orib. *Coll. Med.* 45.2.6 (CMG VI.2.1 162.3)); the delaying of a treatment (Alex. Trall. *Febr.* 2 (i 317.23 P.)); the bubbling up of deadly purulent discharges (Ael. *Promot.* 57 (69.19 Ihm)).

ii–12]] ζαν. Possibilities include ῥί]] ζαν and κόρυ]] ζαν, *Inula* L., 'fleabane' (cf. e.g. Dsc. 3.121 (ii 131.3–132.17 W.)), also κόρυ]] ζαν, 'rheum, catarrh'.

12 mg. πρ(ός) [] , αρ . This marginal addition in a second hand may be intended to make good the apparent omission of a title for the recipe at ii–13. The trace after the break is the right-hand arc of a circle on the edge with the surface missing to the left; e.g. [7]ό (WBH) may be possible. The final trace terminates in an ascending oblique rising above the other traces, perhaps an indication of abbreviation. E.g. ἀρά(χνης δῆγμα) may be a possibility, as in Aët. 13.18 (272.16 Z.) πρὸς ἀράχνης δῆγμα.

12 π [: or possibly τρ[.

13 αυτ . : the termination is rubbed and illegible.

14 ὄσαι read by WBH; cf. 9 παύσαι for the aorist infinitive.

ῥιγοπυρετο[. ῥιγοπύρετος (or -ον) and ῥιγοπυρέτιον are found in magical papyri (PGM VII 211, 218, P. Kellis I 85b.1; cf. the index to *Suppl. Mag.*), the *Cynanides* (2.16.6–7 K. (p. 142), etc.), and astrological texts, and in lexica and scholia as glosses, but apparently not in medical literature: for example, Galen in his definition of ἡπιάλος offers ὅταν ἅμα πυρέττουσι τε καὶ ῥιγοῦσι κτλ. (*Diff. Febr.* 2.6 (vii 347.5–6 K.)). Cf. K. Deichgräber, *Parabasenverse ... bei Galen* (1957) 23, 34–8; CLGP I.1.4 Aristophanes II.11 n.

14–15]]] , γ , ε ἀγρία[. Possibly μυρ]] ζήης ἀγρίας. On μυρσίνη ἀγρία, *Ruscus aculeatus* L., 'butcher's broom', cf. e.g. Dsc. 4.144 (ii 286.17–287.14 W.).

17] πρὸς τὸ ἀβ]τό. WBH suggests that a new recipe for the same condition begins in this line, supplying ἄλλο] at the start (on the same alignment as at 7, 9, 11, and 14).

17–18]] αν]θρωπίαν[. WBH recognizes the accusative singular of λυκανθρωπία or κυνανθρωπία (rather than μισανθρωπία, which does not seem to have been discussed by medical writers of the Roman period), supplying e.g. ποιεί καὶ πρ(ός) λυ]καν]θρωπίαν (or κυ]ναν]θρωπίαν); or if a new recipe begins in line 18 (but cf. 17 n.), πρ(ός) λυκαν]θρωπίαν (or κυναν]θρωπίαν), projecting to the left as at 7, 9, 11, and 14. On lycanthropy and its treatment, cf. Marcell. *Sid. ap.* Aët. 6.11 (CMG VIII.2 151.21–152.12); M. Ullmann, 'Der Werwolf', *Wiener Zs. f. d. Kunde des Morgenl.* 68 (1976) 171–84, esp. 175–6; N. Metzger, *Wolfsmenschen und nächtliche Heimsuchungen* (2011).

21] θυμ[; e.g. a form of θυμιάω, θυμίαμα, θύμων, etc.

5248. RECIPES

15 2B.42/A(a)

Fr. I 12.5 × 10.7 cm

Second/third century
Plate XI

Nine fragments, with text written across the fibres. The largest, fr. 1, gives the upper parts of two neighbouring columns with upper margin preserved to a depth of 1.8 cm and an intercolumnium about 1.7 cm wide; col. ii, preserved to its full width, is about 10 cm wide, and a line holds about 30 letters. On the front, upside down in relation to the text on the back, remains of an account.

The hand is a small informal version of the Severe Style, sloping slightly to the right. β may have a long flat base, projecting to either side. The oblique of ν joins the second upright near the top. The circle of ο may be open on the left. α may have a pointed or rounded loop, and its tail is often raised to join the next letter. The base of ω is nearly flat. The execution is highly variable: for example, the lower part of fr. 2 gives a much more formal impression than fr. 5. Most letter forms are paralleled in the more formal hand of LX 4045 (Aeschines), assigned to the second or third century. For datable examples of the style, see e.g. XVII 2098 (*GLH* 19b), probably of the first half of the third century; L. Del Corso, *Aegyptus* 86 (2006) 81–106.

A paragraphus marks the beginning of a new recipe, the end of the preceding line being left blank (fr. 1 ii 6). The first letter of a recipe is slightly enlarged (fr. 1 ii 1). There is a supralinear correction in the hand of the text at fr. 1 ii 7.

Fr. 1 ii gives two recipes for plasters. The first (1–5) is 'for suppurative inflammation of the head and swellings in the rest of the body'. The ingredients indicate that this plaster is agglutinative or cicatrizing; cf. e.g. Cels. 5.2 (CML I 191.1–6). No quantities are given. The instructions suggest that it is addressed to a student or has been copied directly from a manual.

The second recipe (6ff.) is for a black plaster for conditions including chronic fistulous ulcers and fractures. The treatment for such conditions usually consisted in the application of an agglutinative or cicatrizing plaster. This recipe was obtained from a certain Hephæstion. He may have been a doctor or a pharmacologist, or else a layman who used the recipe and passed it on. Fr. 3.3 appears to give the name of another such person, Eleis. Cf. 5244 introd.

P. Mich. XVII 758 F 10–14 (MP³ 2407.01) offers a plaster that agglutinates and promotes cicatrization (ii κολλητική καὶ κυ]νω]λωτική); cf. GMP I 11 fr. A.10 (MP³ 2395), perhaps ἀν]ακολλ[η]τική. For 'cicatrizing' plasters, cf. also P. Aberd. 10.13 (MP³ 2350), P. Mich. 758 B v. 7. The various types of plasters are discussed in Cels. 5.19 (CML I 201.7–205.33); cf. e.g. the collection in P. Mich. 758, with introd., p. 2.

Fr. I col. ii

For suppurative inflammation of the head and swellings in the rest of the body: black earth and frankincense powder and vinegar with the white of an egg. Having prepared it as you know, apply it. Observe also in the case of other (conditions) that it is powerful.

A black plaster from Hephaestion that I received from him in much ... This one is effective against chronic fistulous ulcers. It closes up ... it is also effective against fractures ... relieves inflammation ...

Fr. I col. i

5]μελι[rather than]μερ[; perhaps μέλι in some case.

Fr. I col. ii

2 φουρήματα: 'swellings' of various kinds, more often ἐμφυρήματα. Cf. also LSJ s.v. φουράω II.1.

γῆν μέλαιναν. For γῆν μέλαινα so called in recipes, cf. e.g. Archig. ap. Gal. *Comp. Med. Loc.* 3.1 (xii 661.4 K.), ps.-Gal. *Rem. Parab.* 2.6 (xiv 423.10 K.), Aët. 2.3 (CMG VIII.1 154.20–26). The reference is probably to ἀμπελίτις γῆ; cf. e.g. Dsc. 5.160.1 (iii 107.7–9 W.) τῆς δὲ ἀμπελίτιδος γῆς, ἣν τινες φαρμακίτων καλοῦσι ..., τὴν μέλαιναν προκριτέον, Damocr. p. 131.123 Bussemaker ap. Gal. *Ant.* 2.15 (xiv 198.8 K.) τῆς γῆς μελαίνης κάμπελίτιδος. This is a bituminous earth with relaxing and cooling properties. It is often found in black plasters and is also used as a cosmetic and hair dye: cf. e.g. Dsc. 5.160 (iii 107.7–16 W.); Gal. *SMT* 9.4 (xii 186.12–187.14 K.), *Comp. Med. Gen.* 2.4 (xiii 497.9 K.); Plin. *NH* 35.194.

3 μάνναν. Frankincense powder has contracting, heating, cleansing, and soothing properties (Dsc. 1.68.2–3, 6 (i 62.8–23, 63.21–3 W.)). See e.g. GMP I 11.13 n., II 11.5 n.; PSI Congr. XXI 3.21 n.; W. W. Müller, *RE Suppl.* XV 700–777; V. Gazza, *Aegyptus* 36 (1956) 87–8.

ὄξος. Vinegar is often one of the last ingredients to be added to a plaster, as it is used to combine the ingredients. It has astringent and cooling properties. See e.g. Dsc. 5.13 (iii 14.23–15.25 W.); Gazza 91.

ὄν φῶν τῶ λευκῶ. Egg white is agglutinative and cooling. On the properties of eggs, cf. e.g. Dsc. 2.50 (i 136.14–1.137.8 W.); Gal. *SMT* 11.1.31 (xii 349.9–355.2 K.); Gazza 109–10. For egg white used in recipes for plasters, cf. e.g. P. Mich. 758 C v. 7–8, M 11.

4 ὡς supplied by WBH.

6 Ἡφαιστίωνος. Hephaestion is a fairly common name, but there is no record of a doctor so called.

ἐμπλαστος μέλαινα. ἔμπλαστος is found alongside the commoner ἔμπλαστρος in P. Mich. 758 H 7 (cf. 4); cf. J.-L. Fournet, *T&MBz* 12 (1994) 320–21. Black plasters, (ἐμπλαστ(ρ)οῦ) μέλαινα, owe their colour to the presence of ingredients such as pitch, resin, or bitumen (Cels. 5.19.2 (CML I 201.19–20)), or to the boiling of mineral ingredients: cf. I. Andorlini, in ead. (ed.), *Testi medici su papiro* (2004) 116, on SB XXVIII 17134 B iii 4–9 (PSI X 1180, MP³ 2421), SB XXIV 15917.19–22 (11) gives a recipe for a μέλαινα (sc. ἔμπλαστρος) Ἀφροδῆ. The recipe in GMP II 11 (MP³ 2394.04) would also produce a black plaster, to judge by the ingredients.

7 ἔ[. . .]. Unclear. ἔ, beginning above and to the left of [], has an extended downward-pointing cap, perhaps better taken as a separate oblique belonging to another letter; [] is an upright with a cross-stroke projecting to the left at letter-top level, perhaps π;] . . . a high speck followed by traces suggesting a triangle touching an upright on the right, perhaps δι. Between ἔ and] . . ., the surface is abraded, and a further supralinear letter may be lost. Perhaps ἔλ[π]ῆ, intended to replace what was written on the line: did the scribe skip ahead from the eta of πολλη to that of αυτη and begin to write ποιει before catching his mistake? The space is tight, but perhaps just sufficient if the scribe wrote small' (WBH).

8 κόλπους. Large fistulous ulcers that spread under the skin are usually treated with agglutinative and discutient plasters. See e.g. P. Mich. 758 A v. 12, B 6, B v. 4; Gal. *MMG* 2.10 (xi 125.1–135.14 K.); *Comp. Med. Gen.* 1.17 (xiii 447.6 K.).

8–9 πα[ρα]κολλα[]]του[. . .]. ενως. WBH proposes e.g. πα[ρα]κολλα[]]αὐ]του[] και]υ]γενῶς.

9–10 κατάγμα[]τα. Plasters used for κόλποι are also used for κατάγματα: cf. e.g. P. Mich. 758 A v. 12 κόλ]πους κατα]γάματα; Gal. *Comp. Med. Gen.* 2.19, 22 (xiii 546.5–6, 557.10–11 K.). (WBH notes that SB XIV 12141.1–2 (MP³ 2407.2) has not πρὸς κἀ[τ]α]γμα ποδῶν but πρὸς ἀλ[γ]η]μα ποδῶν: cf. e.g. P. Brem. 56 Anh.

5 (113–20) τὸ τοῦ ποδὸς ἄλγημα.) Documentary papyri have the form κατέαγμα: cf. BGU II 647.12–13 (130) τραῦμα κατέαγμα | ἐπὶ βᾶθους ... κατέαγματα λ[ί]θ[ο]υ, 25–6, P. Amh. II 93.19–20 (181).

10 ἀψ[λέ]μαντος. Cf. e.g. Gal. *Comp. Med. Gen.* 2.22 (xiii 557.12 K.) ἀφλεγμάντος κολλᾶ (of a black plaster for κόλποι and κατάγματα among other things).

11] . . .] ρωτων. The first traces are too abraded to be helpful; that before ρ is the tip of a high cross-bar. WBH proposes (ἐπι] νεο]τρώτων, as at Gal. *Comp. Med. Gen.* 2.11 (xiii 516.2 K.); cf. e.g. *Comp. Med. Gen.* 2.17 = 3.9 (xiii 537.8–10, 646.19–647.3 K.) φάρμακον ἐπιτετευγμένον πρὸς τὰ νεότρωτα ... ποιεί και πρὸς τὰ μετὰ τραύματος κατάγματα, 2.22 (xiii 560.1–2 K.) βάρβαρος πρὸς τὰ νεότρωτα, κόλπους κτλ.

16 ρ: or possibly the τριῶβλον sign.

Fr. 2

'We expect paragraphi between recipes, as at fr. 1 ii 5, but a paragraphus was not written under any of the first seventeen lines of this fragment, though it is conceivable that one has dropped out above line 14 (cf. n.). Perhaps in this case several related recipes were collected in a single paragraph' (WBH).

2 δυς: perhaps δυρο[], e.g. δυρο[υρ-], δυρο[υλωτ-].

5 χρυς[read by WBH, who proposes e.g. χρυς[οκόλλης (or another case), 'malachite': cf. e.g. Dsc. 5.89 (iii 62.22–63.15 W.), Plin. *NH* 33.92.

6 σπε: [e.g. σπέρ]ματος. Cf. 11.

8 βαλα[e.g. βαλα[ν-].

9 καμ[e.g. καμ[ψ(ο)ύχου ('marjoram', *Majorana hortensis* Moench), Καμ[ίλας γῆς. Cf. Dsc. 3.39 (ii 51.12–52.13 W.), 5.153 (iii 104.5–15 W.).

11 σπε[e.g. cf. 6 n.

12 μι: [e.g. μυ[ν-].

14 χλω[e.g. χλω[ρόν or χλω[ρά, with reference to a plaster or poultice of that colour: cf. GMP II 5 iv 23 (MP³ 2422), and e.g. Gal. *Comp. Med. Loc.* 5.3 (xii 842.14–843.10 K.).

15 λαβ[e.g. λαβ[ών].

17 κβα[e.g. κβα[μ- ('bean', *Vicia faba* L., or (*Αἰγύπτιος κ.*) 'Egyptian bean', *Nelumbo nucifera* Gaertn.), κβα[μιν-, ὄος]κβα[μ- ('henbane', *Hyoscyamus* L.). Cf. e.g. Dsc. 2.105–6 (i 179.1–181.4 W.), 4.68 (ii 224.4–227.3 W.). One possibility is suggested by LXXIV 4975 fr. 1.15–16 ἡλίκον κύαμον Αἰ]γύπτιον: cf. n.

Fr. 3

3 πα]ρὰ Ἡλεῖτος του[. The name Eleis is fairly common in Roman Egypt, and is attested in Oxyrhynchus as both a man's and a woman's name: cf. e.g. XLIV 3197 8, LVII 3905 9. The phrase would suit the beginning of a recipe: cf. fr. 1 ii 6. It is unclear whether Eleis here is a man (with τῶ following?) or a woman. Women are recorded as authors of medical recipes, including recipes for plasters, by Galen and others: cf. R. Flemming, *CQ* 57 (2007) 263–8.

4 κολοκιν[. The last is an L-shaped trace on the line, θ rather than τ. We may restore e.g. κολοκίνθ[ης, κολοκινθ[ίδος (or another case). Colocynth, *Citrullus colocynthis* Schrad., has purging properties. It is found in the composition of pessaries, clysters, suppositories, etc., less frequently in plasters and poultices. See e.g. Dsc. 4.176 (ii 325.13–326.15 W.), ps.-Dsc. *Eup.* 1.30.1, 136.1 (iii 162.15, 203.11 W.), Plin. *NH* 20.14–17.

Fr. 4

4] χυλῶ?

Fr. 5

3 χαλ]κάνθου read and supplied by WBH. Vitriol is common in plasters. Cf. in general Dsc. 5.98 (iii 68.9–69.13 W.); V. Gazza, *Aegyptus* 36 (1956) 105, GMP II 5 iii 22 n.

Fr. 6

3]ροσαιμ[. E.g. π]ρὸς αἴμ[(αἴμ[ορραγίαν, αἴμ[ατος ἀναγωγὴν, αἴμ[οπτυϊκοῦς, αἴμ[ορροΐδας), perhaps in a heading. Alternatively, ἀνδ]ρόσαιμ[ον ('St John's wort', *Hypericum* L.) in some case: cf. e.g. Dsc. 3.154-6 (ii 161.4-163.12 W.).

Fr. 8

6 'Probably -]μένων, a perfect participle agreeing with a plural ingredient' (WBH).

Fr. 9

3] The last trace may be Γ (τριώβολον).

M. HIRT

5249. RECIPES

38 3B.83/E(2)b

5.1 x 4 cm

Third century
Plate II

The top of a column, with text running along the fibres. The upper margin is preserved to its full original height of 1-1.2 cm, and the left-hand margin to a width of 0.4 cm. A trace on the left-hand edge at the level of line 1 may belong to the preceding column. The back has been re-used for another recipe (5250), written against the fibres and running in the same direction as the text on the front.

The text is written in a slanting semi-cursive hand comparable to the first hand of P. Mich. III 158 (250). Besides the drachma abbreviation <, the scribe uses κ- for κε(καυμένον) at line 5. A new recipe begins on a new line with paragraphus above (3), the end of the previous line being left blank. To judge by lines 4 and 5, the column width was about 7.4 cm and a line held about 25 letters.

Lines 1 and 2 give the end of one recipe, and lines 3-7 most of another. The second is for a version of a known eye remedy, discussed below. The first includes blister-beetles and raw pitch, a combination attested in remedies for skin diseases (VIII 1088 14-18 (MP³ 2409); ps.-Dsc. *Eup.* 1.121.2, 123.1 (iii 197.17-18, 198.21-3 W.); Cels. 5.28.18B (CML I 252.1-5)) and alopecia (Plin. *NH* 29.110; Archig. ap. Gal. *Comp. Med. Loc.* 1.2 (xii 408.11-12 K.)) and in plasters for various conditions (e.g. Archig. p. 24.5-8 Brescia and ap. Aët. 3.180 (CMG VIII.1 351.27-352.1); Ael. Prom. 15 (52.25-30 Ihm); Paul. Aeg. 3.81.8 (CMG IX.1 314.13-15)). The ingredients do appear separately in eye remedies (e.g. blister-beetles in a remedy for staphyloma, Gal. *Comp. Med. Loc.* 4.8 (xii 801.4 K.); pitch in a remedy for lachrymal fistula, ps.-Dsc. *Eup.* 1.51.3 (iii 170.10 W.)), but not together. Here, as in 1088, the recipe is no doubt for a preparation to be used against one or more skin conditions. For the combination of eye remedies and skin remedies, cf. 1088; also e.g. PSI Congr. XXI 3 (MP³ 2419.2).

The second recipe is for an eye remedy, ascribed to the doctor Amoitias, to be applied as a wash (3-4 n.). The same combination of seven ingredients is familiar from certain ἀχάριστα

such as those in Gal. *Comp. Med. Loc.* 4.7 (xii 749.13-750.11 K.). The quantities and proportions correspond closely to those of Galen's second recipe (xii 750.3-6 K.). Of the five quantities preserved in the papyrus, three (those for calamine, erica, and acacia) match Galen's, and the others are close: the papyrus has 2 drachmas of burnt copper and 5 of gum arabic where Galen's recipe has 4 of the former and 8 of the latter. The recipe in Galen, like the recipe in the papyrus, was to be used as a wash, according to Aëtius in his version, 7.104 (CMG VIII.2 365.7); Galen's version has simply ἡ χρῆσις δεδήλωται, referring to the instructions for the previous ἀχάριστον (xii 749.18-750.1 K.: ἡ χρῆσις διὰ γάλακτος γυναικείου, ἡ κρᾶσις μέση). See in general on ἀχάριστα L. C. Youtie, *ZPE* 23 (1976) 121-9; I. Andorlini, *BASP* 18 (1981) 6-15; GMP I 13 introd. (pp. 140-45). The original sense of the word is discussed by K.-D. Fischer, in L. Cilliers (ed.), *Asklepios* (2008) 80-82, and in F. E. Glaze, B. K. Nance (edd.), *Between Text and Patient* (2011) 184-7.

καυθαρίδων θώρακι []
πίσσαν ὑγρὰν. []
Ἄμοιτάτος ἰατροῦ λουτ[ρόν]
φαρμάκω· καδμείας πε[πλυμένης]
5 (δρ.) ις, χαλκοῦ κε(καυμένου) (δρ.) β, ὀπίο[υ] (δρ.) , ἐρείκης
καρποῦ (δρ.) β, κυμύνης [(δρ.) , ἀκακί-
ας (δρ.) ς, κ[ό]μμεως (δρ.) ε []
c. 10] []

3 ἰατροῦ 5, 6, 7 < = δραχμαί 5 κ- 7 ι. κόμμεως

'... with the thorax of blister-beetles, ... raw pitch.

'Amoitias the doctor's wash ... medicine: washed calamine 16 dr., burnt copper 2 dr., opium ... dr., erica seed-pod 2 dr., myrrh ... dr., acacia 6 dr., gum arabic 5 dr. ...'

1-2 The absence of quantities and the use of the accusative and dative rather than the genitive suggest that these lines belong to directions for the preparation of the medicine. For the nature of the recipe, see introd.

1 καυθαρίδων θώρακι. Blister-beetles are a source of the blistering agent cantharidin and so commonly prescribed for skin diseases: cf. e.g. Plin. *NH* 29.93-6. The term is 'mainly used to refer to certain beetles of the family Meloidae' (I. C. Beavis, *Insects and Other Invertebrates in Classical Antiquity* (1988) 168). See in general Beavis 168-73; also M. Davies, J. Kathirithamby, *Greek Insects* (1986) 92-3. For the use of the thorax in particular, cf. Paul. Aeg. 7.17.58 (CMG IX.2 362.11) καυθαρίδων θωράκων (v.l. θώρακος), in a recipe for a plaster, and in general for opinions as to whether the whole insect or only part should be used, Beavis 172. Blister-beetles appear in papyri in recipes for skin conditions: 1088 14-18; SB XXVIII 17134 (PSI X 1180, MP³ 2421) fr. A ii 27-31 (together with resin), iii 1-7.

[] a low trace. Perhaps ἐ[πι]βαλ(λ)ε, or ἐ[πι]βαλ(λ)ε: cf. e.g. Gal. *Comp. Med. Gen.* 2.17 (xiii 538.11-12 K.), LXXIV 4977 7 (MP³ 2410.13). Otherwise e.g. ἐ[πι]βαλ(λ)ε, ἐ[πι]βαλ(λ)ε, ἐ[πι]βαλ(λ)ε, π[ι]σάραξι.

2 πίσσαν ὑγρὰν. Raw pitch has many medical uses: cf. e.g. Dsc. 1.72.1-2 (i 70.15-71.7 W.); Gal. *SMT* 8.16.19 (xii 101.9-102.6 K.). It is mentioned at 1088 17, SB 17134 fr. A iii 37, GMP II 11.2 (MP³ 2394.04). Cf. R.

Halleux, *Les Alchimistes grecs* i (1981) 225; V. Gazza, *Aegyptus* 36 (1956) 92-3.

3-7 An eye remedy. See introd. for discussion.

3 *Ἀμοιτάτος*. Probably an Oxyrhynchite. The name is found almost exclusively at Oxyrhynchus (I 47 13, etc.) or in the Oxyrhynchite (LVIII 3929 22). There is one third-century example from Hermopolis (?), P. Stras. IV 235 v. 1.

3-4 *λουτ[ρόν] | φαρμάκω*. For the supplied title, cf. the (different) recipe entitled *Ἐρμείου ὀφθαλμικοῦ τὸ λουτρόν* (Gal. *Comp. Med. Loc.* 4.7 (xii 754.1 K.)). After it, *λοῦε τῶ | φαρμάκω* may be considered, as an explanation of the curious name. Cf. for the verb Aët. 7.104 (CMG VIII.2 365.7) *λοῦε*, used in conjunction with a similar recipe (see introd.). *χρῶ τῶ | φαρμάκω* would be pointless without further specification (e.g. 'against' certain conditions). WBH suggests that *λουτ[ρόν] ἐστὶ τῶ | φαρμάκω* may not be ruled out, though it would leave the recipe without a proper title.

4 *καδμείας πε[πιλυμένης]*: cf. 5243 ii 22 n.

5 *χαλκοῦ κε[καυμένου]*: cf. 5243 i 4 n.

ὀπίο[υ]: cf. 5243 ii 2 n.

5-6 *ἐρείκης*] *καρποῦ*. *καρποῦ* is usually found in collyria with *ἐρείκης*. Cf. 5243 iii 18-19 n.

6 *εὐμόρης*: cf. 5243 ii 6 n.

6-7 *ἀκακί[ας]* is probable and gives a familiar composition. For acacia, cf. 5243 ii 17 n.

7 *κ[ύ]μειος*: cf. 5243 i 8 n.

(*δρ.*) ε. The quantity does not seem to be paralleled in recipes of this kind: cf. introd.

7-8 After the quantity of gum arabic, we expect only a reference to the excipient, and perhaps a brief instruction to 'use' the preparation. The excipient in the case of the parallel recipe found in Galen and Aëtius (see introd.) is water. So e.g. *ἕδωρ ὄμβρ(ε)ιον* may have stood here.

M. HIRT

5250. RECIPE FOR A REMEDY FOR SPREADING ULCERS

38 3B.83/E(2)b

5.1 × 4 cm

Third century
Plate II

On the back of 5249, left-hand parts of the first seven lines of a recipe. Upper and left-hand margins, each of about 0.9 cm, are preserved. The line length cannot be determined. The slanting cursive hand is like the second hand of XIV 1697, of 242.

παρὰ [Hρ]ακλείδου φ[
 πρ(ός) νομάς· ἔστι δὲ δρεμ[
 κλύζει ἐπὶ νομῆ [
 καὶ μὴ δύνηται απ[δλί-
 5 γον μετ' οἴνου φ. [
 χρ(ῶ) δὲ καὶ πρ(ός) γαγγραίν[αc
 φα. [. . .] [

2, 6 ¶ 2 l. δριμ- 6 ✱

'From Heraclides ... against spreading ulcers. It is pungent ... drench when a spreading ulcer ... and cannot ... a little with wine ... Use also against cases of gangrene ...'

1 *παρὰ [Hρ]ακλείδου φ[*. E.g. *φ[άρμακον ἐπιτετυγμένον*, very common in Galen: cf. C. Fabricius, *Galens Exzerpte aus älteren Pharmakologen* (1972) 169-74. Less probably *φ[αρμακοπώλου*: cf. XXXI 2567 6-7 (253), the only example of the word in the papyri. Heraclides is a common name, and it is not possible to identify the holder in this case. There does not seem to be any reason to think of Heraclides of Tarentum in particular. For the naming of the person from whom the recipe was obtained, cf. 5244 introd.

2-6 *πρ(ός) νομάς ... χρ(ῶ) δὲ καὶ πρ(ός) γαγγραίν[αc*. Cf. e.g. P. Mich. XVII 758 A v. 7-8 *ἔμμοτον ὑγρὸν πρὸς νομάς ἔρηγ[ι]τ[αc κτλ.* with 7 n. on plasters suitable for a range of ulcerous conditions. The recipe here bears some resemblance to those of Apollonius Mys ap. Gal. *Comp. Med. Loc.* 6.9 (xii 997.13-998.2 K., corrected from Laur. plut. 75.17 f. 211r) = *AM.26* von Staden (p. 552) *ἰσχυρὸν δὲ πάντοτε μετὰ ταῦτα φάρμακον, ὡς ἦδη καὶ νομάδεςιν ἀφθαίε ἀμύοττον, ὃ συντίθησι μυρικήσ καρπὸν ἔψων μετ' ὄξους. ἰσχυρὸν δὲ καὶ τὸ ἐφεξῆς αὐτῶ γεγραμμένον, ἐφ' ὃ φησι κηκίδα τρίψας, ἐν ὄξει δριμεῖ δίδου διακλύζεσθαι. τὸ δὲ μετὰ ταῦτα γεγραμμένον, ἐφ' ὃ φησιν ὀπῶ κυλφίου διεμμένω παραπλησίως χρῶ, μετὰ δὲ ταῦτα ἐλαίω διάκλυζε, καὶ αὐτὸ δριμὴν καὶ δαικνώδες ἔστι καὶ διαφορητικόν, οὐ στυπτικόν. Paul. Aeg. 4.44 (CMG IX.1 362.26-364.21), *περὶ νομῶν καὶ κηπεδόνων καὶ φαγεδαίνης, βεγίσι κατατλήμασι μὲν χρητέον ἐπὶ τῶν νεμομένων τε καὶ κηπομένων ἐλκῶν δι' ὄξους τε καὶ δέσυκράτου ἢ οἴνου στύφοντος κτλ.* For treatments for spreading ulcers, cf. also Archig. ap. Gal. *Comp. Med. Gen.* 4.10 (xiii 731.14-733.8 K.), Aët. 14.49-50 (cols. 875-9 Cornarius (1549)).*

2 *δρεμ[* (l. *δριμ-*): *δρεμ[ύ, δρεμ[ύτατον*.

3 *κλύζει*: or a compound.

3-4 *ἐπὶ νομῆ [. . .] καὶ μὴ δύνηται απ[*. Perhaps e.g. *ἐπὶ νομῆ [(...)] γένηται (...)] καὶ μὴ δύνηται ἀπ[οκαθαίρεσθαι*: cf. Orib. *Coll. Med.* 9.38.3 (CMG VI.1.2 34.11) *τὰς νομάς ἀποκαθαίρειν*.

4-5 *ὀλί[χον]*: a genitive will have preceded, perhaps with e.g. *ἔπειτα δ'* before it.

5 *φ.* [: e.g. *ἀφ[έ]ψ[η]σας* perhaps not excluded, but the damaged final trace does not particularly suggest ε.

6 Above the left-hand side of ¶, a high trace of uncertain significance.

7 *φαγ[εδα]ίνας* ('cankers') is an obvious guess but not easy to reconcile with the ink. *φαρ[μακ]*- may also be considered.

W. B. HENRY

5251. RECIPES

40 5B.95/H(1-3)b

5.6 × 4 cm

Third/fourth century
Plate XII

The lower outer corner of a parchment leaf, with the lower right-hand corner of a column of writing on the hair side. The flesh side is blank. Red ruled lines mark the edges of the column, giving a margin of 1 cm to the right and 1.2 cm at the foot.

The medium-sized hand is of the same basic type as that of XXXIV 2699 (*GMAW*² 49), assigned by Turner to the fourth century. There are occasional serifs and some contrast between thick and thin strokes. Letters may be very tightly spaced towards the right-hand margin, and a line of writing may extend very slightly past the border on the right.

5251 is the first published medical text on parchment known to be from Oxyrhynchus. The use of a red border is unusual, but cf. the papyrus codex LXI 4163 (template for the sun and procedure text), and in general the use of red ruling in tables (e.g. A. Jones, *Astronomical*

Papyri from Oxyrhynchus (1999) passim). There are also such borders in school texts: cf. R. Criboire, *Writing, Teachers, and Students in Graeco-Roman Egypt* (1996) 78.

As a word is divided at the foot of the column, the text must originally have continued on the back, although no text is preserved at the foot of the page: perhaps 5251 is the last leaf of a codex. It may belong to a doctor's parchment notebook. Such notebooks were considered by Galen to be the most precious among his possessions that were destroyed in the fire of 192: cf. Gal. *Ind.* 31-7 (II.7-13.2 Boudon-Millot-Jouanna); M. Nicholls, *G&R* 57 (2010) 378-86. Use as an amulet (cf. e.g. PSI VI 718 (MP³ 2420)) is not suggested: the text will have continued on the back, and there are no folds in evidence.

The text consists of medical recipes, including parts of two titles (3 and 5, where see n.), referring to related conditions, fistulous ulcers (3) and tumours (5 n.). Ingredients are mentioned in the genitive (4-6), together with quantities (6). The extent of the loss on the left cannot be determined.

] . . .
] . πα
] κόλπους
] μάννης
5] μα στέατος
] α κηροῦ Κρητι-

'... (for) fistulous ulcers ... frankincense powder ... fat ... I ... Cretan wax ...'

2] : the lower part of an oblique descending from left to right.

3] κόλπους. This must belong to the title of the recipe. Cf. 5248 fr. I ii 8 n.

4] : an oblique descending from left to right.

μάννης: cf. 5248 fr. I ii 3 n.

5] μα. At the beginning, the lower part of an upright, reaching below the line, e.g.]υ or]ρ. WBH suggests e.g. πρὸς πᾶν ψ]ῦμα: cf. Aët. 15.19 (II.17 Z.) ἐπιπαστικὸν (καὶ) διαφορητικὸν πρὸς πᾶν ψ]ῦμα; ψ]ύματα and κόλποι (3) are often mentioned together.

στέατος. For the uses of fat, cf. e.g. Dsc. 2.76.17-19 (I 157.11-158.12 W.); V. Gazza, *Aegyptus* 36 (1956) 109; I. Andolini (ed.), *Trattato di medicina su papiro* (1995) 114-15. An adjective will have followed at the start of the next line indicating the animal in question (e.g. goose, pig, goat).

6] : the lower part of an upright.

κηροῦ Κρητι|[κοῦ. Cretan wax is mentioned by Cels. 5.18.31 (CML I 200.10) as an ingredient of an emollient plaster. Dioscorides considered Cretan wax one of the best, together with that of Pontus; all waxes have warming, softening, and moderately filling properties (Dsc. 2.83.1, 3 (I 167.10-12, 168.14-15 W.)). Wax is often a basic ingredient of plasters and poultices. See e.g. P. Mich. XVII 758 B 9 (MP³ 2407.01) and passim; Gazza (5 n.) 107.

M. HIRT

5252. LIST OF INGREDIENTS

43 5B.71/B(9-17)a

12.1 × 25.2 cm

Fifth century
Plate XIII

A list of products with quantities given mostly in carats, written across the fibres on the back of part of a wine account (to be published in a forthcoming volume). The text fills the sheet, indicating that the papyrus was cut for this list. The list is arranged in one column, with the names of the products on the left and the quantities on the right; it continues down the right-hand margin in two columns, the first being of two lines and the second of one line. There is an ink stain at the start of 5 (due to a deletion?), and heavy blots at the start of 15 and before the quantity in 5. For the hand, cf. e.g. BGU II 609 (PGB 42b) of 441/2.

Most of the substances listed are of plant origin. There are also a few substances of mineral origin and one animal product (23 *δνύχιον*). Apart from *πάτημα* (17) and two products whose names begin with *ἀντι-*, perhaps indicating a substitution (3, 25), all of those listed are known to be used in medicine. It is thus conceivable that the list belongs to a medical context. The substances listed would not be used together in any one medical recipe. Some are compatible with the preparation of collyria. In particular, *ψιμύθιον* (15), *χαλκός* (21), and *καδμεία* (22) are known as basic components of such remedies: cf. e.g. L. C. Youtie, in J. Bingen et al. (edd.), *Le Monde grec: Hommages à Claire Préaux* (1975) 555-63. Certain other ingredients, particularly *Κελτική νάρδος* (7), *λιθάργυρος* (20), and *κρόκος* (cf. 25 *ἀντικρόκου*), are also attested in eye salves. The other ingredients are not normally used in ophthalmic remedies. The list may refer to drugs needed for general restocking, or may be a register of items already acquired.

Several of the substances are frequently attested in the preparation of aromatic products, while *ἀρσενικόν* (9), *ἰάριον*, *Κυρικόν*, *ψιμύθιον*, and *κανδαράκη* (13-16) are pigments; all except the last appear in lists of pigments on papyrus (cf. F. Mitthof, in P. Horak, pp. 289-304). Most of the products listed appear in Diocletian's Price Edict, as well as in declarations of prices on papyri, among the products sold by the *μυροπῶλαι* (Lat. *pigmentarii*); see M. H. Crawford, J. M. Reynolds, *ZPE* 34 (1979) 204. Such ingredients are: 1 *μαστήχη* (34.17-18 Giacchero); 4 *στακτή* (34.41 G.); possibly 5 *κακία* (in the Aezani copy of the Edict: 34.5 C.-R.); 6 *ξυλοκακία* (34.6 G.); 8 *ἀμωμία* (34.37 G.); 9 *ἀρσενικόν* (34.25 G.); possibly 11 *φύλλον* (34.2 G.); possibly 12 *κόστος* (34.1 C.-R.); 14 *Κυρικόν* (= *κάνδυξ*, 34.79 G.); 15 *ψιμύθιον* (34.61 G.); 18 *βδέλλιον* (34.7 G.); 19 *Κολοφωνία* (34.103 G.); 24 *ξυλομαστήχη* (34.80 G.). (There is also *κρόκος* (34.14-16 G.): cf. 25 *ἀντικρόκου*.)

The carat, equivalent to 1/24 of the *nomisma* (Lat. *solidus*), is used similarly in the list P. Prag. I 88 (VI); cf. also P. Strasb. K. 19 (VII/VIII; ed. J.-L. Fournet, in A. Boud'hors, C. Louis (edd.), *Études coptes X* (2008) 157-66), which attests the use of the *tremissis* (1/3 of a *solidus*). As Fournet notes (158), there is evidence that the *solidus* was a unit of weight as well as a unit of currency. The *nomisma* may be so used in the list MPER NS XIII 15 (VII): the sums involved would be remarkably large if it were being used as a unit of currency. Admittedly, if the carat is a unit of weight in this papyrus, the quantities are extremely small (1 carat = 0.187 g if a pound is taken to be 323 g; cf. BKT X 25 introd., p. 219 n. 13). The carat does not appear as a

subdivision of the *solidus* before about 430; cf. R. S. Bagnall, *Currency and Inflation in Fourth Century Egypt* (1985) 10.

Related or similarly named ingredients are sometimes placed together, though not consistently. Substances of mineral origin, with the exception of *ἀρσενικόν* (9), are found in two groups of four (13–16), all used as pigments, and three (20–22), all used in eye salves: cf. above. Between them are a pair of ingredients used in *μαλάγματα*, *βδέλλιον* and *Κολοφωνία* (18–19), and a third, *πάτημα* (17), that is mentioned together with *βδέλλιον* in another papyrus list (18 n.). *ἀντικασάμον* follows *κάσαμον* (2–3), *φύλλον* follows *καρυόφυλλον* (10–11), and *κασία* and *ξύλοκασία* (5–6) are paired, as in the list SB XX 14502.4–5 (v).

The text contains numerous misspellings, and the nominative is sometimes written in place of the genitive (6, 18, 21; cf. perhaps 8).

An otherwise unattested term, *ἀντικασάμου*, is found at line 3.

	μα]στίκης	[] ζ
	κασάμου	νό(μισμα) α
	ἀντικασάμου	κερ(άτια) ιβ
	στακτῆς	κερ(άτια) βζ
5	κασίας	κερ(άτια) γ
	ξύλοκασία	κερ(άτια) β
	Καρτικῆς	κερ(άτια) γ
	ἀμομίζη	κερ(άτια) β
	ἀρσαινικοῦ	κερ(άτια) η
10	καρυοφύλλου	κερ(άτια) ιβ
	φύλλου	κερ(άτια) δ
	κώστου	κερ(άτια) γ
	ιαρίου	κερ(άτια) β
	Σιρικοῦ	κερ(άτιον) α
15	ψιμιτίου	κερ(άτιον) α
	σανδωράκις	κερ(άτιον) α
	πατήματος	κερ(άτιον) α
	βδέλλιν	κερ(άτιον) α
	Κολοφονίας	κερ(άτια) β
20	λι(ι)θαργύρου	κερ(άτια) β
	χαλκός	κερ(άτια) β
	κασμίας	[] β

Right margin, downwards:

Col. i	δουχίου	κερ(άτια) γ
	ξύλομαστικής	κερ(άτια) γ

Col. ii	25	ἀντικρόκου	κερ(άτια) αζ
---------	----	------------	--------------

1 l. μαστίχης	2 ζ	3 κερ and so elsewhere	6 l. ξυλοκασίας	7 l. Κελτικῆς
8 l. ἀμομίδος	9 l. ἀρσενικοῦ	12 l. κόστου	13 ιαρίου	14 l. Συρικοῦ
16 l. σανδωράκης	18 l. βδέλλιον	19 l. Κολοφωνίας	21 l. χαλκοῦ	22 l. κασμίας
24 l. ξυλομαστικής				

'Mastic, 1/2 (?) ... Cassamum, 1 *nomisma*. Anticassamum, 12 carats. Oil of myrrh, 2 1/2 carats. Cassia, 3 carats. Xyloucassia, 2 carats. Celtic spikenard, 3 carats. Amomis, 2 carats. Orpiment, 8 carats. Clove, 12 carats. Phyllon (?), 4 carats. Costus, 3 carats. Verdigris, 2 carats. Red lead, 1 carat. Lead carbonate, 1 carat. Realgar, 1 carat. Pounded spice (?), 1 carat. Bdellium, 1 carat. Colophonian resin, 2 carats. Litharge, 2 carats. Copper, 2 carats. Calamine, 2 ... Onyx, 3 carats. Wood of mastic (?), 3 carats. Instead of saffron (?), 1 1/2 carats.'

1 μα]στίκης, 1. μαστίχης: mastic, mentioned in several recipes and lists on papyri. Cf. M.-H. Marganne, *Inventaire analytique des papyrus grecs de médecine* (1981) 364; SB XVI 13002.11 (iii); MPER NS XIII 10.7, 12 (v), 15.12 (vii); P. Coll. Youtie II 86.5 (iii/iv); PSI XV 1558.9 (iii); SB XX 14502.13 (v); SB I 5307.3 (BL VIII 321); P. Naqlun I 9.3 (vi). It is found in fourth-century declarations of prices: cf. LIV 3731 15 (310/11), 3733 14 (312), 3765 34 (327), 3766 90 (329). Dsc. 1.70.3 (i 67.8–18 W.) identifies the *μαστίχη* as the resin of a tree, the *σχίνος* (*Pistacia lentiscus* L.), particularly used as a remedy for coughs and stomach unease; cf. S. Amigues (ed.), *Théophraste: Recherches sur les plantes* v (2006) 68. Cf. also J.-L. Fournet, in A. Boud'hors, C. Louis (edd.), *Études coptes X* (2008) 159; PSI 1558.9 n. The spelling *μαστική* is frequently attested in papyri; on the interchange $\chi > \kappa$, cf. Gignac, *Grammar* i 90–92.

ζ: the descending oblique stroke visible under the break seems compatible with the lower part of the symbol for one half found at 4 and 25.

2 κασάμου. This product occurs in P. Haun. II 20.6 (iv/v), a private letter concerning drugs, in the lists SB 14502.6 and P. Prag. I 88.14 (vi), and in declarations of prices (3731 19, 3733 18, 3765 37, 3766 94). Paul. Aeg. 7.3 (CMG IX.2 222.1–2) identifies *κάσαμον* as the fruit of the *βάλσαμον* (Mecca balsam; *Commiphora opobalsamum* Engl.); see J. André, *Les Noms de plantes dans la Rome antique* (1985) 52. Dsc. 1.19.5 (i 26.1–6 W.) notes the utility of the fruit in several treatments, although it is the juice of the plant (*ὀποβάλαμον*) that has the greatest strength. Its properties are mainly cleansing and heating. In medical treatises, the fruit of the *βάλσαμον* is frequently combined with other substances listed in this papyrus, especially with *κασία* (5), *κόστος* (12), *νάρδος* (cf. 7 *Καρτικῆς*), and *ἀμωμον* (cf. 8 *ἀμομίζη*), for instance in *ἀμαράκιων* (marjoram oil, Dsc. 1.58 (i 53.10–54.14 W.)) and in some medicines for the liver (Gal. *Comp. Med. Loc.* 8.7 (xiii 204.5, 18 K.)).

νό(μισμα) α. A *nomisma* is equivalent to twenty-four carats. The quantity specified for *ἀντικασάμου* in the next line is thus half that specified for *κάσαμον* itself.

3 ἀντικασάμου. The term is not attested elsewhere, but P. Prag. 88.8 has *εἶρεος* (i. *ἴρεως*) καὶ ἀντικόστου. In the light of Dsc. 5.75.13–16 (iii 44.3–45.2 W.), which attests the term *ἀντίσποδα*, used of substances employed when *σποδός* is not available, the item is plausibly taken as a substitute for *κάσαμον*. I. Andorlini, in BKT X 25 introd. (p. 217 n. 7), interprets P. Prag. 88.8 as *ἴρεως καὶ ἀντι κόστου* ('iris, also as a substitute for costus'), on the analogy of the entries in pseudo-Galen, *De succedaneis*. In this papyrus, however, *ἀντικασάμου* should be considered as a single word, as the name of the substance needed instead of *κάσαμον* would otherwise be

missing. Cf. also 25 ἀντικρόκου.

4 στακτῆς: oil of myrrh, sometimes found in lists of ingredients, e.g. P. Prag. 88.4 and MPER NS XIII 15.10. For an example in a medical recipe, cf. 5243 ii 16 with n. It may be substituted for the juice of the βάλσαμον according to ps.-Gal. *Suc.* (xix 726.6 K.).

5 κασία. Cassia (*Cinnamomum cassia* Blume) is sometimes attested in recipes and lists on papyri, for instance in BGU III 953.4 (iii/iv), P. Prag. 88.17, and SB 14502.4, and found in several declarations of prices: cf. 3731 18, 3733 17, 3765 37, 3766 93. It is also mentioned in the register PSI XII 1264.17 (iv); cf. also SB XXVI 16444.4 (v). Dsc. 1.13 (i 17.7–18.14 W.) states that it has the same properties as κινάμωμον, but is less strong; its δύναμις is said to be θερμαντική, ούρητική, ξηραντική, and ετύφουσα πραέως. See further Amigues (1 n.) 90–92. Gal. *SMT* 7.10.11 (xii 13.5–13 K.) describes cassia as primarily emmenagogic and purgative. There is an ink stain before the κ. WBH suggests that α was written and then washed off: cf. perhaps SB 14502.17.

6 ξυλοκασία, l. -ίαι. This item is found in the letter P. Haun. 20.10 and the list SB 14502.5 (immediately after κασία, as here). According to ps.-Gal. *Suc.* (xix 738.2 K.), κινάμωμον may be substituted for it. On the analogy of Dsc. 1.14.3 (i 19.22–20.5 W.), which attests a plant called ξυλοκινάμωμον as a different type of κινάμωμον, it is possible that ξυλοκασία is a variant of κασία. But André, *Les Noms de plantes* 278, takes xylocasia as the branches (or merely the bark) of the cassia. Cf. 24 n.

7 Καρτικῆς, l. Κελτικῆς. On the interchange between λ and ρ in the Byzantine period, and between α and ε before liquids, see Gignac, *Grammar* i 102–7 and 378–86 respectively. For Celtic spikenard, cf. 5243 ii 13 n. It is present in the list P. Prag. 88.3.

8 ἀμομίζη, l. ἀμομίδος. According to Dsc. 1.15.2 (i 21.16–20 W.), ἀμομίζη is a plant used for adulterating ἀμωμον (Nepal cardamom, *Amomum subulatum* Roxb.: cf. Amigues (1 n.) 109–10); cf. Plin. *NH* 12.49. ἀμωμον is sometimes present in papyri among aromatic substances, for instance in P. Coll. Youtie II 86.2; BKT IX 76 fr. 2.7 (vi); X 25 1.4 (vi/vii). It is also found in declarations of prices such as 3731 16, 3733 15, 3765 35, 3766 91. Diocletian's Price Edict, however, includes ἀμωμίζη (34.37 G.). Dsc. 1.15.2 (i 21.8–15 W.) describes the δύναμις of ἀμωμον as θερμαντική, στυπτική, ξηραντική, ύπνοποιός, and ἀνώδυνος if the plant is used as a compress on the forehead; it is employed in the treatment of various disorders, mostly inflammations. The case in which the entry is inflected is dubious; on the interchange between ζ and δ, and that between ω and ο, see Gignac, *Grammar* i 75–6 and 275–7 respectively. (Perhaps ἀμομίζη represents an unattested diminutive ἀμομίδιον): cf. ἐνοίξι for ἐνώδιον in P. Got. 14.4 (vii), cited by Gignac, *Grammar* i 76, and for η written in place of ε, e.g. P. Mich. XVII 758 A v. 4 (iv) πυξίδη; Gignac, *Grammar* i 237–9' (WBH).)

9 ἀρσανικοῦ, l. ἀρσενικοῦ: orpiment (As₂S₃), a mineral ingredient attested in recipes and lists in papyri. Cf. LXXIV 4979 5–6 n.; F. Mitthof in P. Horak, pp. 291–2; A. Colinet (ed.), *Les Alchimistes grecs* xi (2010) 119 (68 n. 24); W. C. Till, *Die Arzneikunde der Kopten* (1951) 87. It is mostly found in remedies for ulcerations; Dsc. 5.104.2 (iii 74.11–13 W.) states that it is an astringent, its δύναμις being στυπτική and ἐσχωρωτική.

10 καρνοφύλλον: clove, the dried blossom of *Eugenia caryophyllata* Thunb.; cf. V. Gazza, *Aegyptus* 36 (1956) 83–4. It is occasionally attested in medical recipes on papyrus; see GMP I 15.6 n. It is not found in Dioscorides, but mentioned by Plin. *NH* 12.30. Cf. also 5253 4; BKT X 25 → 3 n. for its use in aromatic products; Till (9 n.) 61; SB Kopt. I 3.5.

11 φύλλον. The identification of this plant is uncertain; cf. Dsc. 3.125 (ii 135.8–136.3 W.); BKT X 25 1.4 n. According to ps.-Gal. *Suc.* (xix 746.7 K.), either καρδόσταχυς or ἴρις Ἰλλυρικῆ may be substituted for it.

12 κόστος, l. κόστου: costus root (*Saussurea lappa* Clarke), frequently attested in papyri: cf. 5253 2; XI 1384 5; BGU III 953.3; SB 13002.12; MPER NS XIII 10.13, 14.28 (vii); P. Coll. Youtie II 86.3; SB VIII 9834b.22 (iv); P. Haun. 20.7; P. Hart. I 98.4; CPR IX 78.3 (v); SB 14502.3. It appears in lists of prices in 3731 14, 3733 13, 3765 33, 3766 89, and in the register PSI 1264.19. There are further examples in magical papyri (PGM IV 2680, XIII 18, 353). The medical use of this root is discussed in Dsc. 1.16 (i 21.21–22.14 W.), where its δύναμις is said to be θερμαντική, διουρητική, ἐμμήνων ἀγωγός, and useful in the treatment of womb disorders. Cf. M. H. Crawford, J. M. Reynolds, *ZPE* 34 (1979) 204, for references and for the use of κόστος as an aromatic substance; Andorlini (3 n.); Amigues (1 n.) 114–15; Till (9 n.) 69–70.

13 ἰαρίου. ἰάριον, attested in papyri from the fifth century onwards, is a diminutive of ἰός, 'verdigris': cf. Mitthof (9 n.) 292–3. Dsc. 5.79.8–10 (iii 51.13–52.10 W.) describes ἰός as having the same properties as κεκαυμένος χαλκός, useful in disinfectant and cicatrizing remedies. It is frequently attested in medical papyri: see Marganne, *Inventaire analytique* 361; MPER NS XIII 8.42 (v); P. Mich. 758 D 4, 5, 11, E 13, E v. 4; GMP II 5 ii 21, etc. (ii). It is included in the lists P. Michael. 36 A.7, B.10, and MPER NS XIII 15.13 (vioc). Cf. also Till (9 n.) 61–2; SB Kopt. I 6.1.

14 Κυρικοῦ, l. Κυρικοῦ: red lead. For the identification and spellings, cf. Mitthof (9 n.) 295–6. This ingredient also appears in P. NYU II 28.11, 21 (account or medical prescription, 165–200?). Cf. Paul. Aeg. 7.3 (CMG IX.2 257.13–14) κάλυξ ἢ κηρικόν λεπτομεροῦς μὲν ἐστὶ καὶ ξηραντικῆς δυνάμεως, οὐ μὴν θερμῆς. Dsc. 5.88.6 (iii 62.16–17 W.) mentions κάλυξ as the name given by some to burnt ψιμύθιον; cf. Gal. *SMT* 9.3.39 (xii 244.4–7 K.). λιθάργυρος appears as a substitute for κηρικόν in ps.-Gal. *Suc.* (xix 744.8 K.). Cf. also Till (9 n.) 75–6; SB Kopt. I 1.28.

15 ψιμίτιον, l. ψιμύθιον: lead carbonate, a mineral substance described in Dsc. 5.88.6 (iii 62.18–21 W.) as having cooling, cicatrizing, and softening properties. It is frequently attested in medical papyri, primarily in recipes for collyria: cf. 5243 i 11 n. The papyri also attest the substance in remedies for the treatment of wounds and ulcers: e.g. VIII 1088 4, 12 (i); GMP I 12.8 (i); P. Mich. 758 A 10, B v. 10, E 10–11. It is included in the list P. Michael. 36 A.14. For its use as a pigment, cf. Mitthof (9 n.) 296. Cf. also Till (9 n.) 51; Förster, *WB* s.v. The spelling with τ instead of θ is attested in 3765 39 and 3766 95; cf. Gignac, *Grammar* i 92.

16 κανδαράκις, l. κανδαράκης: realgar (As₄S₄). Like ἀρσενικόν (9), this substance has caustic properties and is principally employed in the treatment of ulcerations: cf. Dsc. 5.105 (iii 75.3–12 W.); 4979 5–6 n. for attestations in medical papyri (adding the late Ptolemaic recipe P. Monts. Roca IV 63 v. 2); Till (9 n.) 88. It is also mentioned in P. Michael. 36 A.5. On the interchange between ω and α, cf. Gignac, *Grammar* i 286–9.

17 πατήματος: taken to refer to 'pounded spice'. Cf. the list entry in PSI 1558.10 στύρακος πατήματος; LSJ Rev. Suppl. s.v. It is found in lists of prices in 3733 19 and 3766 102. It is followed in the order for purchases VIII 1142 3–4 (iii) by bdellium, also the next item in the present list, and onyx, for which cf. 23 ονυχίου. It is not attested in pharmacological treatises or medical recipes on papyrus.

18 βδέλλιον, l. βδέλλιον: βδέλλιον, also called βδέλλα, a gum obtained from an Arabian tree (*Commiphora mukul* Engl.). Cf. André, *Les Noms de plantes* 34. It occurs in several declarations of prices, usually in the form βδέλλα: cf. 3731 17, 3733 16, 3765 36, 3766 92. 1142 3–4 (cf. previous note) has it in the form βρέλλιον. Cf. also perhaps SB XX 14212.8 (N. Kruit, K. Worp, *APF* 46 (2000) 103). Dsc. 1.67.2 (i 61.5–14 W.) defines its δύναμις as θερμαντική, μαλακτική, and διαλυτική; it is useful in emollient and dissolving remedies. It is found in a recipe for a μάλαγμα at P. Köln XI 437.15–16 (1 BC), where cf. n., and in a recipe for a purge in Anon. Lond. fr. III.3 Manetti (p. 96); cf. I. Andorlini, *Galenos* 4 (2010) 39–45.

19 Κολοφονία, l. Κολοφονία: a pine resin imported from Colophon. Dsc. 1.71.3 (i 68.18–69.4 W.) describes it as particularly useful in the treatment of chronic coughs. In medical papyri, it is found especially in recipes for μάλαγματα on account of its sticking and softening properties: cf. PSI Congr. XVII 19.9 (v); P. Grenf. I 52 (iii) with I. Andorlini, *BASP* 18 (1981) 20–21, esp. n. 61; and possibly P. Mich. 758 E v. 6. It is mentioned in other lists: cf. P. Prag. 88.13, P. Michael. 36 A.3, B.15. Cf. also Till (9 n.) 69; Förster, *WB* s.v.

20 λ(ι)θαργύρου: litharge (lead monoxide), a mineral ingredient widely attested in medical papyri. Cf. 5247 i 13 n. It is included in the list P. Michael. 36 A.1.

21 χαλκός, l. χαλκοῦ. Copper has astringent and cleansing properties. It is found in medical papyri in various recipes, but primarily as an ingredient of eye salves: cf. 5243 i 4, ii 12 nn. It also occurs in P. Mich. 758 D 11, E 7 in plasters for ulcerations, and among other ingredients in P. Prag. I 89.2 (iv/v). It appears in the list P. Michael. 36 A.10. Cf. also Till (9 n.) 63–4, 71–2; Förster, *WB* s.v.

22 καμείας, l. καμείας. Calamine has astringent properties and is widely found in medical papyri as a component of collyria: cf. 5243 ii 22 n. It is also plausibly restored in P. Mich. 758 B v. 8, in a plaster for ulcers and wounds, and is found in an ἀπεσχαροῦν in MPER NS XIII 12.19, spelt as here καμεί(); cf. K.-D. Fischer, *ZPE* 45 (1982) 122. The spelling *casimia* is familiar in Latin manuscripts: cf. *TLL* s.v. *cadmea* (III 15.40–41). Cf.

for this ingredient also P. Prag. 89.1; Till (9 n.) 59–60; Förster, *WB* s.v.

[] β: the first letter could be ν, standing for νομίματα as at 2, but it would lack the superscript ο. ('Perhaps κε[ρ] (άτια), with a trace of the abbreviation stroke visible to the right of the gap; ν alone would not fill the space' (WBH).)

23 δονυχίου. As suggested in XXXI 2570 iii (b) 13 n., δονύχιον is no doubt used as a diminutive of the δονυξ described in Dsc. 2.8 (i 124.3–12 W.), the operculum (πῶμα) of a cockle, employed drunk or burnt for smoke in medical treatments. The smoke is aromatic. This substance also occurs in the lists SB 14502.12 (δονύχ(ων)) and P. Prag. 88.7, in the order for purchases 1142 4 (δονυχο), and in declarations of prices (3733 28, 3766 110, LX 4081 2 (iv)).

24 ξυλομαστίκης, l. ξυλομαστίγης. This product is mentioned in declarations of prices (3733 29, 3766 111, 4081 3). On ξυλο-, cf. 6 n. André, *Les Noms de plantes* 278, takes the word to mean 'bois de Lentisque', and this interpretation may find a parallel in Dsc. 1.19.3 (i 25.9 W.), which attests the name ξυλοβάλαμον for the wood of the βάλσαμον. Cf. 1 n. for mastic.

25 ἀντικρόκου. LSJ Rev. Suppl. records ἀντίκροκος used of an unidentified aquatic plant in *Hippiat. Paris.* 712 (ii 84.23 O.–H.). It may have the same reference here, or, like ἀντικάσαμον (3), it may refer to a substitute for κρόκος (saffron; *Crocus sativus* L.). Saffron is present in the lists PSI 1558.17 and SB 14502.8 and is frequently found in papyrus recipes: cf. GMP II 4 ii 11 n., 4979 4 n., 5253 5 n.

L. TAGLIAPIETRA

5253. LIST OF INGREDIENTS

62 6B.76/B (1–3)a

7.3 × 7.5 cm

Sixth century
Plate VIII

Six lines and a trace of a seventh, written along the fibres; the back is blank. The upper margin is 1 cm deep and the left-hand margin 0.8 cm wide. The text continues almost to the right-hand edge of the sheet.

The hand is somewhat crude, but clearly influenced by the pointed majuscule. Individual letters are usually written separately and are generally upright. There is some decoration. In 1, some strokes are doubled, as though written with a defective pen; cf. also τ with a double upright in 2. Cf. *GBEPP* 31b (P. Vindob. G 25949), assigned to the middle of the sixth century.

The text has no heading. Each item is given in the genitive with a weight in grams, apart from the third item, for which the weight is given in carats. A gram is about 1.12 metric grams (cf. BKT X 25 introd., p. 219 with n. 13), and a carat about 0.187 metric grams (cf. 5252 introd.). Numerals are not overlined except in 3 and perhaps 1. Recipes lacking the usual heading are found occasionally: cf. LXXIV 4976 introd. However, I have found no recipes with precisely the ingredients included in 5253. The text may then be a list, possibly drawn up by a physician or pharmacist, with precise quantities of ingredients for different recipes, comparable to 5252 and e.g. P. Michael. 36, and perhaps also SB XX 14224 (vi), a list of three items with quantities in carats. For other cases in which it is difficult to establish whether a papyrus contains a recipe or a simple list, cf. e.g. SB XXVIII 17137, GMP II 11. All the items listed in 5253 are used in the production of perfumes: cf. e.g. the table in BKT X 25 introd., pp. 219–20.

Aët. 16.144 (169.14–18 Z.), a recipe for a θυμίαμα, includes five of the items listed in 5253: κόστος, καρυόφυλλον, ναρδόσταχυς, κρόκος, and μόσχος; cf. for similar θυμιάματα Aët. 16.146, 148–9 (169.24–170.7, 171.1–10 Z.). ναρδόσταχυς, κόστος, and καρυόφυλλον are used with other ingredients in the preparation of an aromatic wine (κυδωνᾶτον) in MPER NS XIII 14.28–30 (vii), while in MPER NS XIII 10.10–21 (v), κόστος, ναρδόσταχυς, and κρόκος are included in a recipe for a preparation to be used against bowel problems.

νάρδου στάχυ[ε] γρ(άμματα) η
κόστου γρ(άμματα) η
καρθα κ(εράτια) η
καρεοφύλλου γρ(άμματα) η
5 κρόκου γρ(άμματα) δ
μούσκου γρ(άμματα) η
[

1 l. στάχυος γρ and so elsewhere Possibly η 3 μ 4 l. καρυοφύλλου 6 l. μόσχου

'Spikenard, 8 grams. Costus, 8 grams. Cardamom (?), 8 carats. Clove, 8 grams. Saffron, 4 grams. Musk, 8 grams. ...'

1 νάρδου στάχυ[ε], l. στάχυος. This item occurs as two words in MPER NS XIII 10.15 and the list of spices O. Bodl. II 2153.2 (iv). The term corresponds to the *spica nardi* of Plin. *NH* 12.42. *Nardostachys jatamansi* DC is an aromatic plant imported from India. It was largely used in the preparation of collyria: cf. Aët. 7.117 (CMG VIII.2 392.17–399.4). Cf. e.g. SB XXVIII 17137.3 (v); BKT IX 76 fr. 2.2, 9 (vi); P. Scholl 15.3 (vi). See further Thphr. *HP* 9.7.2 with Amigues' note (pp. 110–11); F. Mitthof, GMP II p. 133; BKT X 25 ↓ 3 n. The νάρδιων perfume was produced from its root: cf. Thphr. *Od.* 28. Cf. also 5243 i 7 n.

2 κόστου. Cf. 5252 12 n.

3 καρθα WBH doubtfully suggests καρθαμόμον (l. καρδαμόμον), but notes that the two examples of this spelling given by Raeder in *Orib. Ec.* 45.17–18 (CMG VI.2.2 204.32–3, 39) are probably due to a typographical error: Bussemaker and Daremberg have the standard spelling in their edition (iv 559.6–7, 12). For examples of θ in place of δ, a rare substitution, cf. Gignac, *Grammar* i 97 (but O. Stras. I 290.2 is to be removed from the list: cf. SB XXIV 16030). The usual spelling is found in a recipe at P. Mich. XVII 758 L v. 4.

Cardamom (*Elettaria cardamomum* White & Maton) is an aromatic plant with a wide range of medical uses: cf. e.g. Dsc. 1.6 (i 10.14–11.7 W.). It appears in various medical recipes alongside other ingredients mentioned in this papyrus: cf. e.g. Paul. Aeg. 7.11.15 (CMG IX.2 300.20–23), a πλευριτική (with κόστος and κρόκος); Ael. *Promot.* 10 (48.2 Ihm), an ἀντίδοτος θηριακή (with κρόκος, κόστος, and ναρδόσταχυς); Archig. p. 17.19 Brescia, a recipe for a fumigation to be used against intestinal worms (with κόστος and κρόκος); Polyarch. ap. Paul. Aeg. 7.18.5 (CMG IX.2 370.1–6), a μάλαγμα (with κόστος, ναρδόσταχυς, and κρόκος); Paul. Aeg. 7.20.34 (CMG IX.2 390.12–15), a recipe for the oil γλεύκων (with ναρδόσταχυς, κόστος, and καρυόφυλλον); Aët. 16.132 (163.22–6 Z.), a recipe for an unguent called φουλιᾶτον (with ναρδόσταχυς, κρόκος, and κόστος).

Pliny (*NH* 13.8, 12, 18, 15.30) offers detailed information on the use of cardamom in perfumes. In particular, it was used with many other ingredients, including κρόκος and κόστος, in the preparation of the *regale unguentum* (*NH* 13.18). Cf. also Thphr. *HP* 9.7.2–3 with Amigues' note (pp. 109–10), *Od.* 25 and 32 with B.

Herzhoff ap. U. Eigler, G. Wöhrlé (edd.), *Theophrast De odoribus* (1993) 84.

4 *καρεοφύλλου*, I. *καροφύλλου*. For ε in place of υ, cf. Gignac, *Grammar* i 273–4. This spelling is also found in MPER NS XIII 14.29, BKT X 25 → 3, ↓ 2; cf. P. Horak 17 r. 5–6 (*καρεφύλου*, *καρεωφύλου*). Cf. on this ingredient 5252 10 n.

5 *κρόκου*. Saffron, derived from the stigmas of *Crocus sativus* L., was widely used in medicine (cf. e.g. F. Mitthof, GMP II p. 132; GMP II 4 ii 11 n.) and as a perfume (cf. Herzhoff (3 n.) 86–7; BKT X 25 ↓ 2 n.). Cf. LXXIV 4979 4 (π/π) with n. for other papyrological instances, to which add O. Stras. I 619.1 (π), O. Claud. II 220.5–6 (π), P. Haun. II 20.8 (iv/v), P. Köln X 410.3 (iv/v), P. Horak 14.7 (v), SB XX 14224.2 (vi), P. Scholl 15.2, 5243 i 12 (?), ii 2–3 (?), 16, iii 16, 22, 5247 ii 5.

6 *μούσκου*, I. *μόσχου*. Musk is an aromatic substance extracted from the abdominal gland of the Siberian musk deer (*Moschus moschiferus* L.) and used in perfumes and unguents; see BKT X 25 ↓ 1 n., and cf. introd. The same spelling is found in BKT X 25 ↓ 1; cf. also SB I 5307.2 (BL VIII 321) *μουσχελ[αίου]*; P. Strasb. K. 19.2 (vii/viii; ed. J.-L. Fournet, in A. Boud'hors, C. Louis (edd.), *Études coptes X* (2008) 157–66) *ΜΟΥΣΧΑΔΟΝ*; MPER NS XIII 15.14 *μουσχάτην*, 17.1–2.

7 []. Two traces on the edge, 5 mm apart, suggesting a square letter such as η, κ, or ν. The second trace is a leftward-pointing hook like that at the tip of the upper arm of κ in 2.

D. COLOMO

III. DOCTORS' REPORTS

Doctors' reports represent one link in a chain of events triggered usually by violence and sometimes by sickness. Following an assault or violent death, a petition was sent by the victim or the victim's representatives to the strategus or, from the time of the Tetrarchs onwards, to the *curator civitatis* or another authority. When prompted by sickness, the petition involves civil servants and may be motivated by the need to justify absence from work (VI 896 ii (316); P. Rein. II 92 (393), where disease had resulted in death). The petition briefly relates the circumstances of the case and requests that the victim be examined officially and a report be written. The strategus then orders one of his assistants to visit the victim, together with a doctor, and to assess the victim's condition. The primary purpose of the examination is not to provide medical care. This is shown by documents indicating that the presence of a doctor is not always required (see LVIII 3926 (246), a petition requesting that an assistant inspect the victims of an assault; P. Mert. II 89 (300), a report submitted by an assistant who had carried out the examination), and by the fact that treatment is almost never mentioned, the only known exceptions being P. Oslo III 95 (96) and BGU II 647 (130). Following the examination, the doctor and the assistant submit a joint report to the strategus, in which they describe, sometimes very succinctly, the injuries endured by the victim, and the state of the corpse (in case of death) or the symptoms presented by the sick person. The last episode in this chain of events in case of assault is the trial of the perpetrator(s), where the report is produced as evidence. Instead of the assistant and a doctor, the 'experts' could consist of two or more doctors (5254), a doctor and two village elders (BGU 647) or, at the request of the petitioner, of a midwife, when the victim is a woman (LI 3620 (326)). In case of violent death, even mummifiers (III 476 (c. 159–61)) could be mandated as 'experts'. Details of published medical reports and bibliography (up to 2011) are given at <http://web.philo.ulg.ac.be/cedopal/medecine-dans-legypte-greco-romaine/>. (The article of D. Hennig, 'Amtlich angeordnete ärztliche Untersuchungen im römischen Ägypten', *Chiron* 44 (2014) 1–21, appeared when this volume was in proof.)

M. HIRT

5254. REPORT OF TWO DOCTORS

28 4B.62/F(2–4)b

6.1 × 9.4 cm

c. 89–94
Plate XIV

The upper part of a report submitted by two doctors to the strategus in response to his instructions to examine a person. The examination is carried out by two doctors instead of the usual team of a *hyperetes* and a doctor (cf. e.g. 5255); colleges of doctors are not otherwise attested in such reports before the fourth century.

This is the earliest medical report so far published, the date being given by the known

limits of the term of the strategus Ti. Cl. Arius. Three other published reports were filed in Oxyrhynchus shortly afterwards: PSI inv. 3242 (ed. A. M. Bartoletti Colombo, *Dai Papiri della Società Italiana (Estratto dai P.S.I.)* (1971) 6–7), of 1 June 94 or 95 (see below, 1 n.); P. Oslo III 95, dated 17–25 April 96; and PSI inv. 3241 (ed. Bartoletti Colombo, loc. cit. 4–5), of 13 June 96. The last two were submitted by Theon son of Harpaeisis, one of the two doctors named in 5254.

The writing runs along the fibres and the back is blank.

Τιβερίῳ Κλαυδίῳ
 Ἀρίῳ στρατηγῷ
 παρὰ Καλαμίωνος
 τοῦ Διδύμου καὶ
 5 Θέωνος τοῦ Ἀρπάη-
 σις ἀμφοτέρων ἰ-
 ατρῶν ἀπ' Ὁξυρύγχ(ων).
 ἐπετράπημεν ὑπὸ
 σοῦ ἐπιθεωρῆσαι
 10 Νίλον ἑρμηνέα.
 ἐφιδόντες οὖν τ[οῦ-
 τον] . [

2 l. Ἀρείῳ 5–6 l. Ἀρπαήσιος 7 οξυρυγ^χ 10 l. Νεῖλον 11 l. ἐφιδόντες

'To Tiberius Claudius Arius, strategus, from Calamion son of Didymus and Theon son of Harpaeisis, both doctors from (the city) of the Oxyrhynchi. We were instructed by you to examine Nilus, an interpreter. Having thus inspected (him) ...'

1–2 Ti. Claudius Arius is recorded as strategus of the Oxyrhynchite nome between 31 October 89 and 93/4 (month unknown). He was probably succeeded by Iulius Asclepinus, the addressee of PSI inv. 3242 (see introd.), dated on the 7th of Sotereios in an unknown year. The reference to Sotereios, an honorific month attested first on 3 June 88 and not later than the end of Domitian's reign (see D. Hagedorn, *ZPE* 159 (2007) 263 n. 14, 264), suggests that the likeliest date for the text is 1 June 94 or 95 (a date in 88 or 89 would make the fasti of Oxyrhynchite strategi in the late 80s implausibly crowded). Peisis, a new strategus, is attested in office on 17–25 April 96. Arius probably served as the strategus of the Heraclides division of the Arsinoite nome from 98 to 101. See J. Whitehorne, *Strategi and Royal Scribes of Roman Egypt*² (2006) 13 (Ars.), 93 (Oxy.).

3 Καλαμίωνος. The name is otherwise attested only in *S* Aeschin. 2.67a (64.205 Dilts) ἐπὶ Καλαμίωνος ἄρχοντος, where however it has been emended to Καλλιμήδους (we owe the reference to WBH).

5–6 Θέωνος τοῦ Ἀρπάησις (l. Ἀρπαήσιος). See introd., and B. W. Jones, J. E. G. Whitehorne, *Register of Oxyrhynchites*, 30 B.C. – A.D. 96 (1983) 238, no. 4937, who suggest that his father's name was incorrectly given as Harpalus in PSI inv. 3242.2. P. Lips. I 120 = M. Chr. 230, of probable Oxyrhynchite origin, records one Harpalus, son of Theon and grandson of Harpaeisis, deceased by December 88 (cf. 11). The relevant entry in the

Register of Oxyrhynchites (no. 1897) does not associate him with Theon the doctor, but this is done in the entry for his putative grandfather Harpaeisis (no. 1876). Harpalus had taken a loan of 1,000 drachmas (χ[ιλίων] in M. Chr. 230.7 is probably right) in 76, which was still unpaid twelve years later and was claimed from his two sons and heirs. Theon made a loan of 356 drachmas in 98 (P. Genova II 62). These are large sums, indicative of a certain financial standing.

6–7 ἀμφοτέρων ἰατρῶν ἀπ' Ὁξυρύγχ(ων). Cf. 5255 3 and n.

8 ἐπετράπημεν. The same verb is used in the three other early medical reports: P. Oslo 95.9–10, PSI inv. 3241.5, PSI inv. 3242.5; cf. also 5255 4–5, III 476 10 (c. 159–61), I 51 5–6 (173), XLV 3245 7 (297).

10 ἑρμηνέα. See most recently R. Mairs, 'Interpreters and Translators in Hellenistic and Roman Egypt', *Pap. Congr. XXVI* (2012) 457–62.

N. GONIS / M. HIRT

5255. DOCTOR'S REPORT

19 2B.83/G(k)

8.8 × 11.8 cm

c. 118–21 or c. 166–8
 Plate XIV

The upper part of a report about an injured man, submitted to Demetrius, strategus, by the doctor Leonides son of Alexander, who had conducted the examination with an assistant called Dionysius.

The identity of the strategus and in consequence the date of this text pose a serious problem. Demetrius was the Oxyrhynchite strategus in 118–21, but the hand that wrote the report seems to be the same as that responsible for PSI V 455 of 178; note in particular the idiosyncratic shape of ρ in both texts. Claudius Demetrius alias Hermias was strategus in Oxyrhynchus in the late 160s, which would suit the palaeographical impression, but it would be odd if his alias were not used in the address.

The edge of a sheet-join is visible 3.3 cm from the left-hand edge. The writing runs along the fibres and the back is blank.

Δημη[τρι]ῶι στρ(ατηγῷ)
 παρὰ Λεω[ν]ίδου Ἀλεξάνδρου(υ)
 ἰατροῦ ἀπ' Ὁξυρύγχων πόλ(εως).
 τῇ ἐνεστῶσῃ ἡμέρᾳ ἐπε-
 5 τράπην ὑπὸ σοῦ διὰ Διο-
 νυσίου ὑπηρέτου ἐφιδεῖν
 τὴν περὶ [] γημιν προσ-
 τάτην C . . . ιδος ἀτῆς
 θυγατρὸς Κλαυδίου Διονύ-
 10 σίου Πέτρ' ἄωνος διάθεσιν.
 ἐφιδῶν οὖν τοῦτον τῇ

αὐτῇ ἡμέρᾳ διὰ τοῦ αὐτοῦ
 ὑπηρέτου ἔγνων αὐτὸν
 ἔχοντα ἐπὶ τῆς ὀψεως [c
 15 c. 6 κ]αὶ ἐπὶ τοῦ . . . [

1 cτρ^ε 2 αλεξανδρ^ο 3 πο^λ 5 διο— 6 l. ἐπιδ^εω 11 l. ἐπιδ^ων

'To Demetrius, strategus, from Leonides son of Alexander, doctor, from the city of the Oxyrhynchis. I was instructed by you on the present day through Dionysius, your assistant, to inspect the condition of —emis, overseer of —is, Greek citizen, daughter of Claudius Dionysius son of Petron. Thus I inspected him on the same day in the presence of the same assistant, and determined that he had ... on the face and ... on the ...'

1 Demetrius is attested as strategus of the Oxyrhynchite nome from 17 July 118 to 26 January 121; he was out of office by 14 February 122. Claudius Demetrius alias Hermias was in office some time in 166/7 and in 167/8. See Whitehorne, *Strategi and Royal Scribes of Roman Egypt*² 95 and 98.

3 *ιατροῦ ἀπ' Ὀξυρύγχων πόλεως*. If 5255 dates from the late 160s, this would be the latest reference to a doctor in such reports who is not called *δημόσιος ἱατρός*; cf. 5254 6–7, but contrast 5257. The earliest occurrence of this term is in I 51 4 of 173. See M. Hirt Raj, *Médecins et malades de l'Égypte romaine* (2006) 102–22; El-Sayed Gad, *Pap. Congr. XXVI* (2012) 265–74.

5–6 διὰ Διονυσίου ὑπηρέτου. There was a Dionysius, assistant of the strategus, in 159/60 (VII 1032 25–6), and apparently no longer in this function in 162. On the role of *hyperetai* in medical examinations, see Hirt Raj, *Médecins et malades* 113–15; cf. also S. Strassi, *Le funzioni degli ὑπηρέται nell'Égitto greco e romano* (1997) 46–7.

7 [. . .] γημων: Πάγγελμων? Πάττημων may not be excluded.

7–8 *προστάτην*. This term probably refers to an overseer of the estate of the daughter of Claudius Dionysius, like those in the estate of the Tiberii Iulii Theones (mostly in P. Theon.; also L 3588 4). The term seems to have a different sense in the Heroninus archive; see D. Rathbone, *Economic Rationalism and Rural Society in Third-Century A.D. Egypt* (1991) 188–93.

8 ζ . . . ιδος. *ζαραπιδος* would suit the traces best, but the female name **ζαραπις* is unattested, and not likely to have existed in view of the common *ζαραπις*. (*Ἀρτέμιδος* is not a possible reading.)

9–10 *Κλαυδίου Διονυσίου Πέτρωνος*. The purpose of the correction is unclear. There is only one Claudius Dionysius attested in second-century Oxyrhynchus, the signatory of a report of sale in 143 (III 520 25).

While Claudius Dionysius appears to be a Roman citizen, his daughter was an *ἀετή*, a Greek citizen, probably from Alexandria, less likely from Naucratis or Ptolemais. This implies either that she was born before her father obtained Roman citizenship, or that, while her father was a long-standing Roman citizen, her mother was a Greek citizen, and she had her mother's status (*Gnomon* 39).

11–12 τῇ αὐτῇ ἡμέρᾳ. Cf. τῇ ἐνεστῶσῃ ἡμέρᾳ in 4. The forensic examination was usually carried out on the day on which the strategus' order was issued, as was the writing of the report; see e.g. LIV 3729 (307) or VI 896 ii (316). Likewise, very little time elapsed between the receipt of a petition and the strategus' order to conduct an examination; see e.g. III 475 (182) or LVIII 3926 (246), in which the strategus initiates the procedure on the day on which the petition was submitted. This efficiency may be due to the fact that injuries had to be recorded before they were treated or healed, so that the report could be used in court. Some apparent exceptions do not disprove the rule. In P. Mert. II 89 (300), it took two days from the date of the filing of the petition for the report to be made, but the examination took place away from the strategus' seat (Karanis vs. Arsinoe). The same geographical distance is in evidence in BGU II 647 (130), and may account for the five-day interval between the assault and the examination. For a possible failure to petition the authorities at the time

of the injury, see L 3555 (1/11).

14 ἐπὶ τῆς ὀψεως [c. The term is not mentioned in any other report (cf. M. Manfredi, 'Qualche osservazione sui referti medici nei papiri', in I. Andorlini (ed.), *Testi medici su papiro* (2004) 153–70 at 168–9), though facial injuries are attested, e.g., in P. Lips. I 42 (391).

15 . . . [: perhaps ἀρ[ι]στ[ε]ροῦ.

N. GONIS / M. HIRT

5256. DOCTOR'S REPORT

9 1B.170/G(e)

7.6 × 7.2 cm

25 September 190

Plate XII

The lower part of a report submitted by one doctor (7) concerning two (or more) persons injured apparently as a result of an assault (6).

The writing runs along the fibres. The back is blank.

c. 25] . . .
 [c. 20 ἐπὶ] δὲ τῆς ἀριστε-
 ρᾶς χε[ιρὸς] [ο]ἴδημα μετὰ ἀποσύρμα-
 τα καὶ ἐπὶ τοῦ δεξιῦ ἀντικνημίου
 5 καταξυσμῆν καὶ τὸν Ζώϊλον ἔχον-
 τα ἐπὶ τοῦ νώτου τύπους πληγῶν,
 ἄπερ προσφωνῶ. (ἔτους) λα Αὐτοκράτορος
 Καίσαρος Μάρκου Αὐρηλίου Κομμόδου
 Αντωνίνου Εὐσεβοῦς Εὐτυχοῦς
 10 Σεβαστοῦ Ἀρμενιακοῦ Μηδικοῦ
 Παρθικοῦ Καρματικοῦ Γερμανικοῦ
 μεγίστου Βρεταντικοῦ, Θωθ κη.

3–4 l. ἀποσυρμάτων 7c

'... and on the left hand a swelling with abrasions, and on the right shin a scratch, and that Zoïlus had marks from blows on his back, which I report. Year 31 of Emperor Caesar Marcus Aurelius Commodus Antoninus Pius Felix Augustus Armeniacus Medicus Parthicus Sarmaticus Germanicus Maximus Britannicus, Thoth 28.'

3–4 [ο]ἴδημα μετὰ ἀποσύρματα (l. -άτων) (WBH). Cf. the expression οἴδημα μετὰ πελώματος in BGU III 928.15 (307 or 311), LXIV 4441 i 10, 12 (316), P. Lips. I 42.16, 17 (391). The only other appearance of ἀποσύρματα in papyri is in I 69 8, where it refers to the marks left by a rope on the ground; the text is a complaint about a robbery, and is dated 21 November 190, about two months later than 5256, but not in the same hand.

In medical authors, however, the word is fairly common.

5 καταξυσμήν. The only other occurrence of this word appears to be in Hesychius δ 2448 δρυφή· ἀμυχή, καταξυσμή. ἀμυχή, the other gloss, is used in some fourth-century medical reports; see LXVI 4528 13 n.

6 τύπους πληγῶν. Cf. PSI V 455.16-17 (Oxy.; 178) τύμματα πληγῶν. The expression occurs also in literature: Ath. 13.585C τοὺς τύπους τῶν πληγῶν.

N. GONIS / M. HIRT

5257. REPORT OF A PUBLIC DOCTOR

64 6B.60/G(2-3)b

9.8 x 9 cm

312
Plate XIV

The upper right-hand corner of a report submitted by a public doctor to the *curator civitatis* of Oxyrhynchus concerning a man with a head injury.

The text runs along the fibres and the back is blank.

ὑπατείας τῶν δεσποτῶν ἡμῶν Φλαου]ῖο[υ] Ο[ύ]αλερίου [
Κωνσταντίνου καὶ Λικιννιανοῦ Λικιννίου]ου Σεβαστῶν [τὸ β].
(*vac.*)

Οὐαλερίω Ἡρωνι τῷ καὶ Σαραπίωνι] λογιστῇ Ὀξυρυγχίτου
παρὰ Αὐρηλίου c. 15] . . . ος δημοσίου ἱατροῦ τῆς

5 λαμ(πρᾶς) καὶ λαμ(προτάτης) Ὀξυρυγχιτῶν π]όλεως. ἐπισταλεῖς ὑπὸ σοῦ [ῖ]σον βι-
βλιδίων c. 5 ἐ]πιδοθέν[τ]ων ὑπὸ Αὐρηλίου Σαραπίωνος
c. 12 -ο]υ τῆς αὐτῆς Ὀξυρυγχιτῶν πόλεως δι' ὧν
c. 13] τὴν οὖσαν περὶ αὐτὸν διάθεσιν καὶ ἐν-

γράφως προσφω]νήσαι, δηλῶ ἐπιτεθεωρηκένας ἐπὶ
10 τῆς πόλεως τὸν προ]οκείμενον Σαραπίωνα ἔχοντα
c. 10 τῆς] κεφαλῆ]c c. 8] . [.] κωφὸν καὶ
] . [

1 -]ῖο[υ] 5 ὑπο 6 ὑπο 8-9 1. ἐγγράφως

'In the consulship of our masters Flavius Valerius Constantinus and Licinnianus Licinnius Augusti for the 2nd time.

'To Valerius Heron alias Sarapion, *curator civitatis* of the Oxyrhynchite (nome), from Aurelius . . . son of . . ., public doctor of the splendid and most splendid city of the Oxyrhynchites. Having been sent by you a copy of the petition submitted by Aurelius Sarapion . . . of the same city of the Oxyrhynchites through which . . . his present condition and to report in writing, I declare that I have examined the aforementioned Sarapion in the city, who had . . . his head . . . deaf and . . .'

1-2 On the second consulship of Constantine and Licinius, see *CSBE*² 177. The restoration of the iteration figure in line 2 ([τὸ β]) seems secure: the *gentilicia* of the consuls-emperors have not occurred in any

papyrus dated by their third (313) or fourth (315) consulship. See also 3 n.

3 To judge by the spacing, the name of the *curator civitatis* should be restored as [Οὐαλερίω Ἡρωνι τῷ καὶ Σαραπίωνι], attested in office from 307/8 to September 312, rather than as [Οὐαλερίω Ἀμμωνιανῷ τῷ καὶ Γεροντίω], who held the position from early in 313 until 318. See P. Oxy. LIV, pp. 222-3.

4 It would be tempting to restore παρὰ Αὐρηλίου Διοσκόρου Ἡ]ρωνος, the name of a public doctor who submitted a report to the *curator civitatis* in 316 (LXIV 4441 ii 4), but this would be somewhat short for the space.

δημοσίου ἱατροῦ. This is the latest report submitted by a single doctor; there are two doctors named in VI 896 ii (316).

5-6 ἐπισταλεῖς ὑπὸ σοῦ [ῖ]σον βι]βλιδίων c. 5 ἐ]πιδοθέν[τ]ων. We expect e.g. ἐκ βιβλιδίων ἐπιδοθέντων (σοι); perhaps τῶν σοι ἐ]πιδοθέν[τ]ων (WBH). The construction is somewhat comparable to P. Mich. XVIII 787.19-20 (181-3) ἐπισταλεῖς ὑπὸ Ἰσιδ[ώ]ρου στρατηγῆσαντος . . . ἐ]πιτολήν; cf. also LVIII 3926 35-6 (246) ἴσον βιβλιδίου Σενπατοῦτος ἐπι]ετέλλαιταί σοι (similarly P. Ryl. II 117.2-3 (269)).

7 -ο]υ τῆς αὐτῆς Ὀξυρυγχιτῶν πόλεως. The lacuna must have contained the function or occupation of Aurelius Sarapion.

8 E.g. [ἤξιόν με ἐφιδεῖν (l. ἐπιδεῖν)]. διάθεσιν is often the object of ἐφιδεῖν (e.g. XXXI 2563 24, XLIV 3195 ii 35, LIV 3729 15, LXIV 4441 i 5). For ἤξιόν, cf. SB XX 14638.7-14 (c. 330-40) ἐξ ἐπιδόσεως | βιβλίων Στεφάνου Ἀρποκράτους . . . ἀξιούντος τὴν περὶ | τὰ τραύματα αὐτοῦ διάθεσιν ἐπιθεωρηθῆναι | ὑπὸ δημοσίου ἱατροῦ καὶ ἐγ[γ]ράφως δηλῶσαι.

9-10 ἐπὶ | [τῆς πόλεως, as in LXIII 4370 12, LXVI 4529 10.

11 ἔχοντα | [τῆς] κεφαλῆ]c] . [.] κωφόν. ἔχοντα introduces the injuries suffered by Sarapion. At the start of 12, perhaps κατὰ τὸ μέσον τῆς] κεφαλῆ]c (WBH); cf. 4441 ii 14-15 ἔχοντα κ[ατὰ μ]έσον τῆς κεφαλῆς διαίρεσιν (. [. .] , *con ed. pr.*; new reading suggested independently by WBH and NG). In the gap after κεφαλῆ]c, τραῦμα, 'wound', is likely; then before] κωφόν, WBH suggests καί, noting that διαίρεσιν καί], as in 4441, would probably be too long. Hearing loss has not occurred in other doctors' reports (an ear affected by a blow in CPR XVIII 23.18).

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INDEXES

Figures in raised type refer to fragments, small roman numerals to columns. Square brackets indicate that a word is wholly or substantially restored by conjecture or from other sources, round brackets that it is expanded from an abbreviation or a symbol. Greek words not recorded in LSJ, its Revised Supplement, the *Diccionario Griego-Español*, or (for Byzantine texts) the *Lexikon zur byzantinischen Gräzität* are asterisked. The article and (in the documentary sections) *καί* are not indexed.

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305 ύπατείας τών δεσποτών ήμών Φλαουίου Ουαλερίου Κωνσταντίνου καί Λικωνιανού Λικωνίου Σεβαστών τὸ β' [5257 1-2]

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